Military expenditure and regime type : an empirical investigation into civil military relations

Military Expenditure and Regime Type:
An Empirical Investigation into Civil Military Relations

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Declaration and Acknowledgements

Chapter 2 is based on an extended essay written for a module, "Political Economy of Violence, Conflict and Development", I attended at the School of Oriental and African Studies as part of the requirements of the PhD. Chapter 4 is based on a paper "Military Spending and Democratisation", published in *Peace Economics, Peace Science and Public Policy*. Parts of chapter 5 are based on my MSc dissertation, but have been substantially modified and expanded. This chapter is forthcoming in the *Journal of Defence and Peace Economics*. Chapter 6 is based on a paper "The Demand for Military Spending in Authoritarian Regimes", which was produced in collaboration with Vincenzo Bove and is forthcoming in the Journal of Defence and Peace Economics. Chapter 7 is based on a working paper entitled "Military Expenditure and Natural Resource Rents in the MENA region – a Panel Investigation", which was produced in collaboration with Sam Perlo-Freeman. The remaining work presented in this thesis is the authors own. Feedback on all main chapters of this thesis were provided at numerous conferences, including the Jan Tinbergen European Peace Scientist Conference, the Annual International Conference on Economics and Security, the Midwest Political Science Association Annual Convention, the International Studies Association Annual and the Defence Science and Technology Laboratory Historical Analysis Symposium.

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Abstract

This thesis investigates empirical issues in civil military relations. It is comprised of one qualitative chapter (chapter 2), one chapter describing the data (chapter 3) and four empirical chapters (chapters 4-7).

Chapter 2 gives an overview of coup-proofing strategies available to dictators, before analysing how various dictators of the MENA region utilised these strategies to varying degrees. Chapter 2 is a qualitative study. The purpose of this chapter is to provide context and depth to the empirical chapters that follow.

Chapter 4 explores the role of the military in democratisation. It tests the hypothesis that countries in which the military was politically powerful before democratic transition occurs are less likely to consolidate democracy. It represents one of the first empirical applications of Acemoglu et al.'s (2010) paper "A Theory of Military Dictatorships". One of the main challenges encountered in this chapter is problem of quantifying the political power of the military. While this chapter considers a number of possible measures, the main measure used for empirical analysis is military burden. Chapter 4 effectively explores the impact of military spending on democracy, using a panel of 102 countries over the period 1960-2000. In chapter 5, this relationship is reversed.

Chapter 5 examines whether democracies spend less on the military that autocracies. While papers on the determinants of military spending generally include democracy as a control variable, with a few exceptions, it is not the focus of their enquiry. This chapter addresses resulting problems in the existing literature concerning data quality and the appropriate measurement of key variables. In particular, it addresses the question of causality between military spending and democracy, a question which arises but is not resolved in chapter 4.

Chapter 6 delves further into the relationship between military spending and regime type, unpacking the category of autocracy into military regimes, single-party states and personalist regimes. I develop a theory of authoritarian survival that explains why certain types of dictatorships are likely to allocate more resources to the military than others. I test this theory empirically using an unbalanced panel 64 countries over the period 1960-2000.

Chapter 7 uses new data on military spending in the MENA region to explore the relationship between military expenditures and natural resource rents. While there is abundant anecdotal

evidence on the connection between these two variables, this relationship has not been systematically tested empirically. I do so using a panel of 16 MENA countries covering the period 1960-2010.

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1 Introduction

1.1 Context

The outbreak of the Arab Spring in 2010 renewed people's faith in democracy. If dictatorships in this region, which have been amongst the longest surviving in history, were breaking down, surely it would only be a matter of time before democracy prevailed all around the world. For a brief moment in 2011 it seemed like even China might be affected by this wave of democratisation.

Nearly four years later, in 2014, people are no longer optimistic. While Tunisia appears to have made a relatively smooth transition towards more democratic government, Egypt, after a hopeful spell of democratisation, seems to have reverted back to its old ways. In some countries, such as Kuwait and Jordan, the revolution never really took off, while in others, such as Bahrain, they were brutally repressed. Syria, at the time of writing, is in the grips of full scale civil war in its third year.

Thus, the study of democratisation remains as relevant as ever. There is no consensus on what causes democracy, and theories of democratisation abound (chapter 4 of this thesis will discuss the modernization and the institutional approaches). However, one factor that has appeared to play a pivotal role throughout the Arab Spring has been the military.

When I first began work on this thesis in October 2010, Egypt was firmly in the hands of President Hosni Mubarak, backed by the military. Less than five months later, in February 2011, anti-government protests and the military's decision to side with the protestors had forced Mubarak to step down and hand power over to a military council.

The military council initially promised to hold elections after six months, but postponed these repeatedly. It was not until June 2012 that a new president, Mohammed Morsi of the Muslim Brotherhood, was finally elected, and this only after demonstrators took to the streets anew to protest the military's increasingly apparent lack of commitment to democratic change. However, in the same month, a Constitutional Court ruling dissolved parliament. Moreover, a decree issued by military council gave the generals control over passing laws and prevented the next president from overseeing the army's budget and declaring war without the consent of the Supreme Council of the Armed Forces. This called into question what real power the new president would have.

One year later, in July 2013, the military removed President Morsi from office and suspended the constitution, in what would come to be called a military coup. Over the following months, protests in support of Morsi were violently put down by the military. In February 2014, the government appointed to rule after the removal of Morsi resigned to clear the way for Field Marshal Abdel Fattah al-Sisi's to become president, which he did in May 2014. The future of democracy in Egypt remains tenuous.

The events in Egypt can be contrasted with other countries' experiences of the Arab Spring. For example, in Tunisia, the military sided with the people but did not get involved in post-revolution politics, allowing for a relatively smooth transition towards democracy. In Syria and Bahrain, the military sided with the government, turning their guns on the protestors. Moreover, in Syria, while there have been some defectors, a large part of the military continues to support the government in what has turned into a civil war in its third year at the time of writing. In Libya and Yemen, the military was split in its support of the countries' leaders from the start.

These examples highlight the importance of the military in determining the outcome of revolutions. In fact, Barany (2011, p. 28) argues that "no institution matters more to a states

survival than its military, and no revolution within a state can succeed without support or at least the acquiescence of its armed forces".

The study of democratisation and the study of authoritarian survival are in many ways two sides of the same coin[1]. In order to fully understand change, one needs to look at counterfactual instances. If one can understand how dictators seek to stay in power, one can better identify weaknesses in their power structures.

1.2 Civil-military Relations

The military is a key player in any dictatorship's survival. However, as Acemoglu et al. (2010, page 2) put it, "a powerful military is a double-edged sword". On the one hand, a powerful military can help ensure a dictator's survival; on the other hand, a powerful military can pose the main threat. Thus, coup proofing can become an important aspect of a dictator's survival strategy. In the following chapter, I shall discuss coup-proofing strategies in depth.

The relationship between the government and its military is crucial to understanding why a military chooses to support the government or not. Civil-military relations may be determined by a number of factors, internal and external. The role the military played in bringing the current regime to power is an important internal factor: in countries in which the dictator was brought to power by a military coup, such as Syria, the military may come to see itself as an equal partner in politics. This behaviour is even more pronounced in countries in which the military 'liberated' the country in an armed struggle, as in Algeria and Egypt. In these cases, the military often views itself as the embodiment of the new regime. This position is frequently reinforced by the role it played in modernising the country. In contrast, militaries which played no role in bringing the regime to power, for example Tunisia, or actively resisted the regime, for example Iran, frequently find themselves side-lined. In Iran, the regimes *parallel* military structure, the Islamic Revolutionary Guard, came to see itself as the embodiment of the new regime in place of the regular armed forces.

Dictators' coup-proofing strategies might vary substantially depending on this relationship. Regimes in which the militaries are organically linked with the government tend to secure the

[1] The breakdown of an authoritarian regime does not necessarily mean a move to more democracy, as one dictatorship can be replaced by another.

military's loyalty by ensuring it has a stake in the continuation of the regime. This might, for example, involve allowing the military to pursue profitable economic activities. Regimes in which the militaries are not linked with the government often take a more repressive approach, purging the military of disloyal members, arbitrarily rotating commanding officers, controlling the armed forces with parallel military structures, and monitoring logistics.

All dictators will try to surround themselves with people loyal to them. Where possible, they will try to exploit family, tribal, or ethnic ties. Thus, one might distinguish between countries that are ethnically heterogeneous and can therefore exploit differences within the population, and those that cannot, e.g. ethnically homogenous countries. Syria's Al-Asad relies on widening circles of trust comprised first of his family, the Kalbiyya tribe and the Alawite sect, and finally other loyal tribes. Tunisia, on the other hand, is ethnically a relatively homogenous country, and its leaders cannot exploit such ties. Similarly, one can distinguish between monarchies with large Royal Families and those without, for example Saudi Arabia and Jordan, respectively. The ability to disseminate members of the Royal Family throughout the ranks of the military has important consequences for civil-military relations in these regimes.

Natural resource endowments also play an important role. Oil-rich countries, like Libya and Saudi Arabia, can afford to appease the military with modern equipment. On the other hand, those countries that use their oil wealth to support large welfare states, i.e. the Gulf monarchies, find themselves less dependent on the military to secure internal stability.

Finally, a very important determinant of civil-military relations is the existence of external threats. Both Egypt and Iran tried to change their relations with the military after the experiences of international conflict highlighted the need for a more professional military with an external focus. The consequence of coup-proofing is often the inability of the military to perform its most important task – defending the county's borders.

1.3 My approach

1.3.1 Overview of chapters

This thesis approaches the topic of civil-military relations from a quantitative angle. While less wide-spread, this approach is becoming increasingly popular amongst researchers as

economists take on issues traditionally confined to political science. Economists have contributed to the study of conflict (see work by Tim Besley, Paul Collier, Jack Hirshleifer, and others), regime change (see work by Daron Acemoglu and Jim Robinson, amongst others), military coups (for example, Acemoglu, Ticchi and Vindigni, 2010), determinants of defence spending (see, for example, work by Ron Smith), etc.

One of the main challenges in approaching the study of civil-military relations quantitatively is how to measure key variables, in particular military involvement in politics. This thesis uses military burden (military expenditure as a percentage of GDP) as a proxy. It takes the view that military expenditure is a tool with which a dictator can co-opt the military. Thus, military burden reflects the extent to which a dictator prioritises the military.

This thesis is organised in eight chapters (including the introduction). The relevant literature is discussed chapter by chapter. In the following paragraphs, I highlight each chapter's original contribution.

Chapter 2 gives an overview of coup-proofing strategies available to dictators, before analysing how various dictators of the MENA region utilised these strategies to varying degrees. Comparisons are made between military regimes, single-party states, personalist regimes and monarchies, a regime categorisation I shall return to in chapter 6. Chapter 2 is a qualitative study. The purpose of this chapter is to provide context and depth to the empirical chapters that follow.

Chapter 3 introduces the data that are used throughout this thesis. In particular, it critically discusses the problems associated with the data and what actions have been taken to remedy these problems where possible. Chapter 3 also introduces new data on military expenditures in the MENA region that I collected for this thesis.

Chapter 4 explores the role of the military in democratisation. This chapter seeks to understand why some countries successfully transition to democracy while others do not. It is motivated by the recent Egyptian experience, but also historical examples in Latin America. It tests the hypothesis that countries in which the military was politically powerful before democratic transition occurs are less likely to consolidate democracy. It represents one of the first empirical applications of Acemoglu et al.'s (2010) paper "A Theory of Military Dictatorships". One of the main challenges presented in this chapter is how to quantify the

political power of the military. While this chapter considers a number of possible measures, the main measure used for empirical analysis is military burden. Chapter 4 effectively explores the effect of military spending on democracy. In chapter 5 this relationship is reversed.

Chapter 5 examines whether democracies spend less on the military than autocracies. This chapter is motivated by the question whether democracy has a demilitarising effect. While papers on the determinants of military spending generally include democracy as a control variable, with a few exceptions, it is not the focus of their enquiry. This chapter addresses resulting problems in the existing literature concerning data quality and the appropriate measurement of key variables. In particular, it addresses the question of causality between military spending and democracy, a question which arises but is not resolved in chapter 4.

In addition, chapter 5 explores the question of heterogeneity between regime types and across the Cold War and post-Cold War eras. The objective here is to examine whether the standard determinants of military expenditure behave in the same way across these sub-groups and pooling is therefore justified – an issue largely ignored in the literature.

Chapter 6 delves further into the relationship between military spending and regime type, unpacking the category of autocracy into military regimes, single-party states and personalist regimes. It revisits issues explored in chapter 2 regarding differences between regime types. I develop a theory of authoritarian survival that explains why certain types of dictatorships are likely to allocate more resources to the military than others.

My theory is based on ability and necessity of different dictators to co-opt and/or repress the military. One aspect it does not consider is the role natural resource rents might play. Chapter 7 uses new data (collected by myself in collaboration with SIRPI) on military spending in the MENA region to explore the relationship between military expenditures and natural resource rents. While there is abundant anecdotal evidence on the connection between these two variables, this relationship has not been systematically tested empirically.

Finally, chapter 8 concludes this thesis. It discusses possible policy implications of my findings and suggests areas for further research.

1.3.2 Econometric Methodology

The econometric investigation is undertaken on a sample of N=102 countries covering the period 1960-2000, T=40 (or in the case of chapter 7, a sample of 16 MENA countries covering the period 1960-2010). The availability of data with both large cross-sectional and time-series dimensions raises various questions regarding the choice of econometric model. Large N, large T datasets raise three main issues: dynamics, heterogeneity, and cross-section dependence. Different treatments of these issues lead to there being a very large number of panel estimators and no consensus on which should be used because their relative advantages and disadvantages depend on unknown parameters. The main estimator used in this thesis is the static fixed effects model, which is the standard model used in the more recent literature, thus making comparison with other papers more easy. The issue of dynamics is further examined in chapter 5, where the differences between the short and long run are considered using an error correction model.

The main explanatory variable of interest to this thesis is regime type, which is a variable that does not change much over time and for many countries do not vary at all. Estimation of the effect of time invariant variables remains a matter of research, (for example Pesaran and Zhou, 2014). The regime type data will be discussed in detail in chapter 3.

In this thesis it is assumed that because T is quite large the Nickel (1981) bias, which biases the coefficient of the lagged dependent variable towards zero, is unlikely to be a problem. Therefore, GMM estimators have not been used. However, even this is not uncontroversial. For instance, since it is the ratio N/T that matters for the bias and since N is large relative to T, Tongur et al. (2015), who explain the log of the share of military expenditure by political regimes and other variables using a similar sample size, use Arellano-Bond GMM. Gaibulloev et al. (2014) also argue for the importance of the Nickell bias even though they have data for 1970-2009. In addition, the GMM estimators typically used in this situation difference the data to remove the fixed effect, further reducing the information in the regime type variable.

With the exception of chapter 7, this thesis uses a large and therefore disparate group of countries. Therefore, the Pesaran and Smith (1995) heterogeneity bias, which biases the coefficient of the lagged dependent variable towards one, is likely to be a more important problem than the Nickel bias. It is noticeable that in Tongur et al. (2015), which has a similar sample size to that used in this thesis, the coefficient of the lagged dependent variable is close to one and as large as 0.869. This makes the long-run effects of other variables implausibly

large, e.g. the coefficient on the growth rate lies between -3.5 and -5.8 in various specifications.

Pesaran and Smith (1995) argue that this heterogeneity bias can be avoided by using heterogeneous dynamic estimators, such as the mean group, which allows every coefficient to differ between country, or the pooled mean group of Pesaran, Shin and Smith (1999) which allows short run coefficients to differ, but constrains long run coefficients to be the same. However, Baltagi and Griffin (1997) and Baltagi, Griffin and Xiong (2000) argue that such heterogeneous estimators show quite implausible values and predict less well than traditional fixed effect estimators. This large variance of the heterogeneous estimators is likely to be exacerbated in the present case by the fact that the crucial explanatory variable, regime type, shows so little time series variation. Thus, rather than estimating separate ARDL equations for each country, this thesis will rely on pooled estimators which can exploit the cross-country variation in regime type. However, some more limited heterogeneity is allowed for in chapter 5, where I test for equality of the parameters across regime types and across Cold War and post-Cold War eras.

Given that dynamic pooled models suffer from heterogeneity bias and that there is not enough time series variation in regime type to efficiently estimate its effect from heterogeneous ARDL estimators, the static model has some attractions. The data - particularly those on military expenditure - are most probably non-stationary and first differencing to make them stationary would again remove much of the identifying variation. It has long been argued that the cross-section levels association can identify long-run effects (see, for example, Baltagi and Griffin, 1984, or Pesaran and Smith, 1995). More rigorously, Phillips and Moon (1999, 2000) prove that the static pooled levels equation can estimate the long run effect, whether the non-stationary variables show homogeneous or heterogeneous cointegration or even if they are not cointegrated. In the latter case, although the levels regression in each country is spurious, the coefficient converging to a random variable for large T, the average over such random variables, given by the pooled estimator, consistently estimates a long-run effect.

Cross-sectional dependence occurs because countries respond to similar political, economic and geographical factors. For example, countries may respond to similar security threats, an important determinant of military expenditure. The problem of cross-sectional dependence is discussed in more detail in chapter 7. Cross-section dependence can be thought of in terms of common factors which drive both dependent and independent variables. In a homogeneous

model where the common factors impact every country equally, they can be allowed for using time fixed effects. Such common factors are clearly important in my data. For instance, military expenditure fell and democracy increased in many countries after the end of the Cold War. However, including year fixed effects by using deviations from the cross-section averages can also remove a lot of variation in the country specific variables, since the cross-section averages explain a lot of the variation. Gaibulloev et al. (2014) demonstrate that once cross-section dependence is allowed for, relationships between variables (they use the example of terrorism and economic growth) disappear. Thus, allowing for cross-section dependence is likely to make it more difficult to estimate the effect of regime type on military expenditure.

There remains an ongoing debate regarding how best to address the question of dynamics. One group of scholars advocate the use of dynamic panel models, and this method is being increasingly used in development economics, as well as defence economics (see for example, Acemoglu, et al., 2008 and Dunne and Perlo-Freeman 2003). However, other scholars, including Gundlach and Paldam (2012) argue that the inclusion of a lagged dependent variable removes too much variation in the data (this paper will be discussed in detail in chapter 4).

Like Gundlach and Paldam (2012), Gaibulloev et al. (2014) and many others, I find that allowing for dynamics, heterogeneity and common factors can make the variables of interest insignificant. Like many others, I interpret this as a consequence of over-controlling and removing too much variation from the sample. However, it should be kept in mind that there is the alternative interpretation, that they really do have no effect.

2 Case Studies in the MENA Region

2.1 Introduction

This chapter seeks to give some context to the empirical issues studied in this thesis by making a comparative study of cases. In particular, it explores civil-military relations in the various countries of the Middle East and North Africa (the MENA region) and examines the various coup-proofing strategies adopted by dictators in order to keep their militaries in check.

The MENA region is a particularly interesting region to study coups because it experienced so many of them. Between March 1949 and the end of the 1980s, fifty-five coups were attempted in the region – half of them successful (Quinlivan, 1999, p. 133). However, by the 1980s, the number of coups declined. Be'eri (1982) argues that this is largely because those who had seized power through coups "learned to take preventative measures to forestall their recurrence". Table 2.1 outlines the Polity IV score for countries of the MENA region in 2013. With the exception of Tunisia, which at the time of writing was undergoing a transition and therefore had not been rated, all countries remain autocracies.

Table 2-1 Polity IV scores for MENA countries in 2013

Country	Polity IV in 2013	Country	Polity IV in 2013
Algeria	2	Morocco	-4
Bahrain	-10	Oman	-8
Egypt	-4	Qatar	-10
Iran	-7	Saudi Arabia	-10
Iraq	3	Syria	-9
Jordan	-3	Tunisia	Transition
Kuwait	-7	UAE	-8
Lebanon	6	Yemen	3
Libya	0		

Notes: A score of 10 denotes a full democracy; 9 to 6 denote democracies; 5 to 1 denote open autocracies; 0 to -5 denote closed democracies; -6 to -10 denote autocracies.

This study attempts to cover most of the MENA region. However, it focuses on certain cases that have been particularly interesting in light of the Arab Spring. Using a similar categorisation as will be used in chapter 6, I distinguish between military regimes, one-party states, personalist dictatorships and monarchies[2]. I compare and contrast the strategies adopted by each. In doing so, I seek out patterns that may shed light on, and further the understanding of civil-military relations in autocracies. However, these strict categorisations are not always easily applied to individual cases. Thus, this chapter yields additional insight into how useful this categorisation is.

This chapter contributes to the literature on regime change by exploring one aspect of how it is *prevented*. The study of regime *persistence* is as important as the study of regime *change* itself, for in order to fully understand change, one needs to look at counterfactual instances. If one can understand how dictators seek to stay in power, one can better identify weaknesses in their power structures. Regime changes can be caused by popular uprisings, external intervention or military coups, and there are studies dedicated to each of these causes (for example Snyder, 1992; Acemoglu and Robinson, 2006; Booker, 2009). This chapter focuses predominantly on (the prevention of) the latter case – regime change initiated by the military. There are good reasons to focus on this case: the majority of dictators have been removed from power by a coup rather than by other means. Svolik (2009) finds that of the 316 dictators who were removed from power by non-constitutional means between 1945 and 2002, 32 were removed by a popular uprising and 30 stepped down under public pressure to democratize; 20 were assassinated (but not as part of a coup or a popular uprising) and 16

[2] Monarchies are not studied in chapter 6.

were removed by foreign intervention; 205 dictators - more than two-thirds of the sample - were removed by government insiders, either members of the government, the military or the security forces.

There are two dimensions to authoritarian survival. Brownlee (2002) distinguishes between crisis *deterrence* and crisis *survival*. *Deterrence* refers to the prevention of coup attempts. *Survival* refers to the persistence of a regime in the face of coup attempts. This distinction is important because regimes that survived the longest were not necessarily the ones that most successfully prevented coup attempts. Colonel Muammar Gaddafi experienced numerous coup attempts throughout the four decades he ruled Libya, as did Saddam Hussein in the 25 years he ruled Iraq. Both were finally removed by international forces. Thus, 'successful' coup-proofing cannot just be interpreted as the non-occurrence of coups, but also the survival of a regime through such crisis.

It must also be noted that the military is by no means the only group a dictator will seek to control. Generally, within each society there exists a smaller group of citizens with the ability to influence who will lead the government – termed "selectorate" by Bueno de Mesquita et al. (2005). A leader's survival depends on the creation and maintenance of a winning coalition within this selectorate. In a democracy this is the electorate; in a dictatorship the selectorate may include members of the royal family, high officials of the ruling party, the officer corps, members of the dictator's ethnic group, tribe, or home region, etc, depending on the nature of the state. There are, for example, numerous studies dedicated to dictators' attempts to co-opt its elite (for example, Magaloni, 2007). However, to limit the scope of this chapter, I will focus on the relationship between the dictator and the military.

The rest of this chapter is organised as follows: in section 2, I compile and review various coup-proofing strategies that have been mentioned in the literature; in section 3, I explore case studies by category, starting with military regimes, followed by one-party states, personalist dictatorships and monarchies, and finally Syria, which has been categorised as a hybrid regime; in the final section I offer up some conclusions.

2.2 An Overview of Coup-Proofing Strategies in Dictatorships

If one is to understand civil-military relations in autocracies, it is useful to compare them to a benchmark case. Huntington (1957) distinguishes between *objective* and *subjective* mechanisms of civilian control. Objective civilian control "militarizes the military", restricting its activities to the military realm and emphasising professionalism, while subjective control "civilianizes the military", drawing it into politics (Huntington, 1957, p. 83). Huntington argues that objective control mechanisms are likely to produce healthier civil military relations. However, when civilian institutions are weak, "politicians often cannot resist the temptation to bring the military into the domestic political arena, both to support their particular faction in its struggle with rival groups and to ensure their groups control of the armed forces" (Desch, 1996, p. 14). Autocratic governments often need to involve the military in politics in order to enforce their rule. However, a politically active military is more likely to undertake a coup. The challenge for the dictator is to subordinate the military while allowing it to play a role in politics.

According to Quinlivan (1999, p. 133), the essence of coup-proofing is "the creation of structures that minimize the possibilities of small groups leveraging the system to such ends". A survey of the literature yielded the following list of coup-proofing methods:

- *Recruitment along family, tribal lines, etc*: Key posts in the military (and other important offices) are filled with people close to the dictator. For example, in Syria, Bashar Al-Asad surrounds himself with members of his own tribe and religion. Often it is not just the high ranking officers but also the soldiers who are recruited from amongst loyal groups. For example, Jordan's Arab Legion is traditionally recruited from the Bedouin of the East Bank, a tribe that has proven itself loyal over time.

- *Promotions, rotations, retirements, mass purges and executions*: Promotions are based on loyalty, while members of the military of questionable allegiance are purged or retired. Iran's purge tribunals, set up to cleanse the military of Shah loyalist, make a good example. Acts of disloyalty are met with imprisonment, exile and not infrequently execution. Generals are regularly rotated to prevent them from building personal power bases with factions of the military. A particularly interesting episode was the purging of war heroes in the aftermath of the Iran-Iraq war because Saddam

Hussein feared that certain officers, by distinguishing themselves in the battlefield, had become too popular amongst the armed forces (Hashim, 2003, p. 20).

- *Ideological indoctrination*: Governments indoctrinate the military with religious or party ideology. Iran's Islamic Commissars are good example.

- *The creation of paramilitary forces*: New regimes often create their own military structures whose loyalty they feel more confident about. The primary task of these praetorian parallel military structures it to serve as a counterweight to the regular armed forces. Often the paramilitaries will be specifically trained and equipped to deal with coups. In some cases, as in Gaddafi's Libya, paramilitaries are recruited from outside the country.

- *Logistics control*: 'Logistics control' refers to "the oversight of and control over the garrison and movements of military units, access to ammunition and fuel, and supervision of field training exercises" (Hashim, 2003, p. 21). From an operational point of view, a coup will only succeed if coup-makers are capable of providing fuel and ammunition to units and are able to move these units from the garrisons into the capital without the rulers finding out until it is too late. Thus, dictators will often ensure that military units – apart from well-vetted praetorian guards – stationed within the vicinity of the capital are not armed with live-fire ammunition. Another example is Iran's Revolutionary Guard Units who "set up their barracks near garrison exists to ensure that regular army units did not move without proper authorization" (Ward, 2009, p, 227).

- *Military Spending*: Leaders may try to buy the loyalty of the military by purchasing sophisticated weaponry or paying what Acemoglu et al. (2010, p. 2) refer to as an "efficiency wage". If spending per soldier is above a certain level, soldiers are likely to prefer the status quo over democratisation.

- *Economic incentives*: Governments may try to give the military a stake in the continuation of their regime by allowing them to pursue profitable economic activities. In Algeria, Egypt, Syria, Yemen, the Sudan and Iran, the militaries have become economic actors in their own right. On the other hand, Mani (2007, p. 592) argues that "enclave building in entrepreneurship enhances the political power of the military

institution and its officers, making them less dependent on – and therefore less accountable to – civil and political society".

2.3 Case Studies

As mentioned above, this chapter attempts to distinguish between military regimes, one-party states, personalist dictatorships and monarchies, following a categorisation similar to the one employed in chapter 6. However, these strict categorisations are not always easily applied to individual cases. Table 2.1 outlines Ezrow and Frantz's (2011) categorization of MENA countries.

Table 2.2 Ezrow and Frantz's categorisation of MENA countries by regime type

Military	Monarchies	Single-party	Personalist	Triple Threat[3]
Algeria (1992-2006)	Saudi Arabia (1932-present)	Iran (1979-present)	Iraq (1979-2003)	Egypt (1952-present)
	Kuwait (1961-present)	Lebanon (1989-2005)	Libya (1969-present)	Syria (1963-present)
	UAE (1971-present)	Tunisia (1957-present)	Yemen (1978-present)	
	Morocco (1956-present)			
	Jordan (1946-present)			
	Oman (1971-present)			

2.3.1 Military Regimes

Algeria (1954-2011)

Ezrow and Frantz (2011) classify Algeria as a military dictatorship from 1992 onwards. While Algeria may not be a military dictatorship in the classic sense[4], scholars do argue that the

[3] 'Triple Threat' regimes face threats from a personalist dictator, a single-party and a politically influential military.
[4] By this I mean that Algeria is not ruled by a military junta.

military is, in fact, “the real power in Algeria” (Cook, 2007, p. 27). It derives its legitimacy from the central role it played in liberating the country from the French in an ugly, decade-long struggle. Addi (2002, p. 181) explains that “the (FLN) movement was in a sense reintegrated or absorbed into the army in the form of populist ideology […]; the army thereby came to embody the historical heritage of the FLN”. Moreover, “Algeria’s first leaders came from military backgrounds and carried the legitimacy of the military into politics, economic development and foreign relations” (Sorenson, 2007, p. 104). The image of the military was further boosted by its involvement in civil construction projects, such as the Trans-Saharan Highway, the Great Green Wall, and various dams, as well as by providing earthquake relief. Sorenson (2007, p. 104) notes that “these missions helped the military to burnish the nation-building legacy that has sustained their position in Algerian political life”.

Civil-military relations in Algeria are anything but objective. Moreover, it is hard to talk of coup-proofing strategies in a country where the military has demonstrated no qualms in taking control of the government when it deems fit. In 1992, the military stepped in after the Islamic Salvation Front’s success in Algeria’s first multi-party national elections threatened the position of the FLN. The military pressured President Bendjedid into resigning, cancelled the elections, and appointed a five-member High Council of State to act as a collective presidency. Violence ensued and a state of emergency was declared under which the military was granted certain direct powers, for example, when dealing with insurgents and terrorists.

Nevertheless, excluding this period of civil war, the military has been content to exercise its influence from behind the scenes, rather than taking government into its own hands. Since the civil war, the military has withdrawn from centre stage, but it continues to exert its influence from behind the scenes. For example, although Algeria’s presidents are no longer recruited directly from the ranks of the military, a support base within the military high command continues to be an informal requirement for the position. As long as the military can trust that the president will defend its interests, it has no need to intervene itself.

In addition, it is noteworthy that Algeria has recently launched major efforts to modernize its military, entering into a USD7.5 billion arms deal with Russia in 2006, as well as smaller deals with China, the US and Europe (Gelfland, 2009, p. 23). These efforts may be motivated by a number of factors: on the one hand, Algeria is responding to the continued threat posed by Islamic insurgents, albeit diminished since the 1990s. However, the types of equipment procured are not best-suited for counterinsurgency operations (Gelfland, 2009p. 24). On the

other hand, Algeria seeks to boost its international influence and stay ahead of its neighbours, in particular Morocco, as the regional leader. Finally, one might interpret Algeria's efforts as an attempt by the government to appease the military and keep it out of politics.

However, the military's reputation has been tarnished by the violence it perpetrated in the civil war, and Sorenson (2007, p. 105) argues that the role of the military is diminishing, as the country takes (cautious) steps towards democracy and engages in (modest) economic privatization.

Egypt (1952-2011)

Ezrow and Frantz (2011) classify Egypt (before 2011) as a regime that faces a triple threat from a personalist dictator, a single-party and a politically influential military. However, Egypt's civil-military relations are in many ways comparable to Algeria's. As in Algeria, Egypt's military has close ties with the government, which were formed when a group of officers, the "Free Officer Movement", overthrew the monarchy in a coup-turned-revolution and embarked on a mission to transform Egyptian society. The intention was to bring "greater material well-being, justice and freedom within a democratic polity" to the Egyptian people (Vatikiotis, 1991, cited in Cook, 2007, p. 368). According to Cook (2007), the Egyptian military derives much of its legitimacy and status from this reform programme.

Formally, Egypt was conceived as a liberal polity; in practice it was an authoritarian state ruled by autocratic officer politicians (Kamrava, 2000, p. 71). Particularly noteworthy is the Emergency Law which was passed in 1958 and has been in force with little interruption since 1967. It extends military rule throughout Egypt. Cook (2007, p. 71) summarizes the situation:

> "Under the Emergency Law, newspapers and periodicals have been subject to censorship and closure, workers have been barred from striking, and political organisations may meet only at the discretion of the Ministry of Interior. Without the proper permit, opposition groups are unable to hold public rallies or demonstrations, leaving private rooms or buildings as the only venues in which to gather and organize".

Moreover, the Emergency Law allowed for the creation of a parallel judicial system, the Supreme State Security Court, which Cook (2007, p. 72) describes as a "blunt instrument with

which state elites have confronted their opponents". The Supreme State Security Court purposefully employs a vague definition of security. For example, from 1992, the government made use of the Emergency law to justify the referral of civilians to Egypt's military court. This measure was originally intended to provide a rapid sentencing in cases related to terrorism. However, members of the Muslim brotherhood have consistently been tried and convicted in the military courts, even though the organization had not engaged in violence for over three decades (Cook 2007, p. 72).

Civil-military relations in Egypt shifted after 1967 when the Egyptian military experienced war with Israel. This military setback highlighted the need for a more professional military that focused on fighting and was not preoccupied with politics. Thus, in 1968, Nasser made an official commitment to reconstruct the armed forces and turn it into effective fighting force. The military was to relinquish its day-to-day role in government and concentrate on preparing for another round of war with Israel. Nevertheless, Cook (2007, p. 67) notes that "in practice, the Israeli presence on the East Bank of the Suez Canal meant that the military remained the most privileged group of state organizations as Egyptians prepared for the decisive battle with Israel".

As in Algeria, the Egyptian military continues to exert political influence from behind the scenes. This is possible because

> "The military and the president share interests and worldviews linking their fortunes [...]. The military trusts the president as the steward of the state and political development. Socialized in the same manner as the officers through military education, training and experiences, Egypt's head of state maintains a perspective that tracks closely with that of his uniformed colleagues. […] If the officer corps needs to, it can influence political events through the president. The mutually reinforcing relationship with the president has allowed the officers to remove themselves from day-to-day governance" (Cook, 2007, p. 73).

Cook argues that this development has actually benefited the military because any public dissatisfaction is directed at the president, not the military who remains relatively free from criticism (Cook, 2007, p. 73). Furthermore, he makes the interesting point that "a potential unintended consequence of severing the link between the president and the armed forces could, in fact, be a more autonomous military establishment. After all, "without the benefit of a fellow officer serving as president, the military establishment would need to ensure its interests more actively" (ibid, p. 74). As in Algeria, the Egyptian military appears to be happy to

remain behind the scenes as long as they can be confident that the president will defend its interests.

Not only does the Egyptian military continue to exert political influence, it also has substantial economic interests. “Members of Egypt’s senior officer corps positioned themselves at the nexus of the state and private sectors in order to reap the benefits of both” (Cook, 2007, p. 80). Economic activities range from traditional pursuits, like weapons production and procurement, to more development oriented activities, such as the rehabilitation and development of infrastructure, agricultural expansion and water purification, to such far reaching undertakings as the manufacture of appliances and footwear, agriculture, food processing, services related to aviation, engineering, land reclamation, tourism, and consultancy for foreign corporations. The military’s activities are rife with corruption and Springborg (1987, p. 10) notes that “Egypt’s military enterprises were subsidised to such an extent that these business activities were actually a drain on the overall state budget”. The Egyptian military also receives substantial financial support from the United States.

The Egyptian military clearly had a stake in the continuation of Mubarak’s regime and for several weeks remained undecided about whether to intervene on behalf of the government and crush the protests earlier this year. Initially, it stood aside when Mubarak’s security forces suppressed protesters. ”Only when it became clear that [his] tactics had failed, did it step in” (Henry and Springborg, 2011). Ultimately it has shown itself to be predominantly concerned with protecting its own interests. In July 2013, the military removed civilian President Morsi from office, suspended the constitution and violently quelled protests. It cleared the way for Field Marshal Abdel Fattah al-Sisi's to become president, which he did in May 2014. The future of democracy in Egypt remains tenuous.

2.3.2 Single-party States

Tunisia (1957-2011)

There is some disagreement concerning Tunisia’s regime type classification. In quantitative studies, such as Ezrow and Frantz’s, the country is classified as a one-party state. In qualitative research it is often described as a patrimonial regime (see for example Kamrava, 2000). The transfer of power from Bourguiba to Ben Ali can be interpreted as a transition from one

personalist dictator to another, or as the continuation of one regime under different leadership. Pressure from Islamist protestors in 1987 led Bourguiba to appoint Ben Ali as Prime Minister in an attempt to ease tension. When the situation did not resolve itself, Ben Ali replaced him in a constitutional coup. While both Presidents displayed characteristics of personalist dictators, there was a large degree of continuity as the regime reconsolidated around a new presidential figure (Brownlee, 2002, p. 47).

Either way, civil-military relations in Tunisia are unique to the MENA region because of the approach taken by its leaders of marginalising the military. It makes for a particularly interesting comparison with Egypt. Both experienced successful revolutions in 2011, in which the military played a decisive role by choosing not to shoot at demonstrators. Yet they differed substantially in their political systems and civil-military relations. Unlike the Egyptian military, the Tunisian military has been relegated to the political sidelines. Again unlike in Egypt (or Algeria), the Tunisian military played no role in the country's ascension to independence, so it does not have the same organic connection with the government. Moreover, Ben Ali, Tunisia's president until 2011, favoured relations with the security and intelligence forces, he himself having had a background in the security services (Sorenson, 2007, p. 107).

Distrustful of the military, Ben Ali continued the strategy begun by his predecessor Bourguiba of purposefully ensuring the military's weakness. He denied the military the right of legal political association and placed it under the jurisdiction of a civilian defence minister (ibid, p. 107). He limited the size of the army to 50,000 men, making it the smallest force relative to its population in Arab world (Henry and Springborg, 2011). In addition, he kept it undersupplied and poorly equipped, in order to render a military coup physically impossible (Ware, 1985, p. 38). Tunisia's military budget is also one of the smallest in the MENA region – in 2009 it was 1.3% of GDP compared with an average of 5.2% for the region (SIPRI Yearbook, 2011).

The Tunisian military receives training as well as limited arms transfers from the US. According to Henry and Springborg (2011), Ben Ali "effectively placed it under US tutelage". This has resulted in a relatively high degree of professionalism within the Tunisian military. The Tunisian military has been described as "a non-praetorian, highly professional body of officers and men" (Ware, 1985, p. 37), dedicated solely to national defence. The majority of its missions have been peace-keeping operations, for example in Haiti, Cambodia, Somalia, Kosovo and Bosnia (Sorenson, 2007, p. 107). Moreover, in the past, it was not the first force called upon to deal with internal dissent: Bourguiba relied on gendarmerie, National Guard

and a special paramilitary Brigade of Public Order to suppress the Islamic Tendency Movement (Brownlee, 2002, p. 48).

Tunisia's leaders' coup-proofing strategies were thus the opposite of those used by Egypt's leaders. They can even be described as objective control mechanisms. Instead of bringing the military into his patronage network, Ben Ali, and Bourguiba before him, excluded it. The Tunisian military, therefore, had no stake in the continuation of Ben Ali's rule and did not hesitate long before turning on him and supporting the revolution (Bahgat, 2011). This suggests that in autocratic governments, objective control mechanisms are not always effective. In contrast, Egypt's military remained indecisive about which side to come down on until revolution had gained critical momentum.

Iran (1979-2011)

Iran makes for an extremely interesting case study because of the complete political transformation the country experienced in the late 1970s: In 1979, the Islamic Revolution, led by Ayatollah Ruhollah Khomeini, succeeded in replacing the monarchy with an Islamic Republic that survives until the time of writing. The new government then faced the task of subordinating the Iranian military, which had been politically powerful and loyal to the monarchy. There was disagreement among the various revolutionary groups as to how to reform the military. Leftist and Marxist groups preferred to dissolve the Iranian military and establish a "people's army" in its place. However, Khomeini and his followers, anticipating future challenges to the regime, preferred to keep the military intact. Instead they sought to purify and subordinate it.

The government set up purge tribunals to cleanse the military's ranks of officers disloyal to the regime. The tribunals initially targeted Shah Loyalists and officers that had committed war crimes, but soon expanded to those who were suspected of disloyalty due to their political views and affiliations. Officers were executed or imprisoned, exiled or retired. Others were assassinated by leftist groups or became victims of personal vendettas. The purges carried on into the second half of the 1980s. By mid-1980s and estimated 12,000 military personnel had been removed from service (Ward, 2009, p. 229).

On the other hand, officers with family ties to the clergy or who belonged to religious families were promoted. Moreover, to ensure the ideological indoctrination of the rank and file, the government created the Political-Ideological Directorate (PID) staffed with clerics, the so-called "Islamic Commissars". Ward (2009, p. 230) describes their function:

> "These Islamic commissars were assigned to the joint staff down to the platoon level with bureaus and subordinate elements attached to divisions down to companies. The PID was responsible for the ideological and political education of the troops, evaluated candidates at all ranks for promotion, reviewed military school curricula and published text books, and provided radio and television programs for the troops. So-called strike groups worked with existing Islamic societies, basically IRP cells, in the military to indoctrinate, organize recreational and educational activities, hold daily prayers, and enforce Islamic behaviour. Generally, they spied on the soldiers and served as snitches".

The Islamic Commissars continue to play an important role in coup-proofing modern Iran. Most importantly, the new government created its own organized armed forces, the Islamic Revolutionary Corps. Its main charge was to act as a counterweight to the regular armed forces. In addition, it was endowed with law enforcement authority, ran prisons, protected government facilities and served as bodyguards for regime leaders. Comprised of men who had fought in the revolution, this group came to see itself as the protector of the regime. As the role of the Guards expanded, Iran developed into a dual military structure. "The Guard's leadership has become closely intertwined with more hard-line elements of the regime since the revolution and has viewed it as their duty to intervene in politics when needed" (ibid, p. 307). "Influential in politics, bathed in privileges, and an economic force in its own right because of its involvement in defence production and public works" (ibid, p. 302), its position in Iranian politics is in many ways comparable to those of the Algerian or Egyptian militaries. To some extent, the Islamic Revolutionary Corps developed into a force that too needed to be contained. For this reason the government established the Basij paramilitary units, Ashura Battalions and the (all-female) Al-Zahra Battalions. These forces are manned by poor Iranians "still beholden to the regime for subsidies, work, and religious guidance" (ibid, p. 307). They are equipped for riot control and containing internal unrest.

As with Egypt's defeat by Israel, the Iraq-Iran war highlighted the fact that civil-military relations had diminished the Iranian military's ability to function as effective fighting force. The military suffered from a deficiency in leadership because of the constant turnover of officers and generals, a lack of sufficient equipment, not just for fighting but for training too, and an

inability to cooperate with the other fighting forces that had been pitted against them - all part of the regime's attempt to coup-proof the military. However, "the clerical regime could not focus on the military because of economic needs and internal political problems following Khomeini's death less than a year later in June 1989. The [military] escaped this period with no major changes to its organization and order of battle" ibid, p. 302).

A proposal to merge the military with the Revolutionary Guard was blocked by the Guard itself, who were finally formalized as the country's preeminent service (ibid, p. 302). The military was to focus on external defence. In 1992, the government issued official regulations for the armed forces. Ward (2009, p. 302) summarizes:

> "In addition to stressing Islamic ideology as a basic precept for organizing and equipping the armed forces, the principles demanded loyalty to the Supreme Leader, sought self- sufficiency, and held defence—deterring, defending against, and ultimately punishing an aggressor against Iran—as the armed forces' primary orientation".

However, the military remains underequipped and underfunded. "Short of money and facing strong competition for government funds, Iran's military leaders look instead to improving discipline and training" (ibid, p. 304), for example, by expanding the military education system, creating command and staff colleges and Supreme National Defence University. Moreover, turnover among senior military ranks normalised, enabling more coherent leadership.

2.3.3 Personalist Dictatorships

Libya (1969-2011)

In spite of Gaddafi attaining power by means of a military coup, the Libyan army cannot be regarded as a dominant force. In fact, Gaddafi made conscious efforts to marginalise the army, following several coup attempts against him. As a result, one might question Gaddafi's coup-proofing strategies. Nevertheless, he clung to power for over four decades, making him one of the longest ruling dictator of the 20th century. While he may not have successfully prevented crisis, he did successfully survived them.

Gaddafi's regime was built around circles of trust, which included his family his home tribe, as well as certain members of other tribes, including the Qadhadhafa, Maqariah and Warfalla tribes (Haddad, 2011). All important tasks were given to members of Gaddafi's circles of trust. Gaddafi was highly distrustful of the military, which had a reputation as colonialist collaborators (Sorenson, 2007, p. 109). Thus, he sought to undermine the capacity of the military. He reduced the size of its units and "created overlapping chains of command, frequently and arbitrarily rotated key commanders, and favoured loyal incompetents over capable, independent-minded officers for senior command slots" (Cordesman, 2001, p. 424). According to Sorenson, Gaddafi initially did try to buy of the loyalty of the military by purchasing modern equipment, and at one point Libya's tank core was the tenth largest in the world. However, this did not equate with an effective fighting force. According to a publication by the Afro-Middle East Centre (Haddad, 2011) while the Libyan army "boasts huge resources, [it] suffers from a general absence of standards which should apply to its equipment, as well as labour problems and poor maintenance services [...], lacks competence and efficiency, [and] is incapable of being mobilised". In fact, Libya's military was once described as the "world's largest military junkyard" (Sorenson 2007, p. 111).

Furthermore, Gaddafi excluded the military from politics, favouring civilian ministers. Only two of the 17 ministers came from the ranks of the military. In the 1970s, when Gaddafi abolished ministries altogether in an attempt to achieve his vision of a stateless society, "a potential avenue for military influence through the Ministry of Defence disappeared" (Sorenson 2007, p. 110). In the place of ministries, Gaddafi created a "dizzying system of committees and congresses in which Libyans serve[d] and, on paper, govern[ed] their own affairs. In practice, Gaddafi constantly shift[ed] networks, ensuring that the participants were ill-prepared to address substantive policy issues" (Brownlee, 2002, p. 46).

Gaddafi also created several quasi-military structures to counter-balance the regular armed forces. While other dictators have created dual-military structures, Gaddafi took this coup-proofing strategy to a whole new level. His quasi-military structures included the Revolutionary Guard, the Islamic Pan-African Legion (a group of mercenaries recruited from various parts of Africa), the Libyan People's Militia, the People's Cavalry Force, as well as seven other military units, such as the Elite 32 Brigade, specifically designed to protect the heart of the system and its leaders. These paramilitary forces were recruited from loyal tribes and heavily indoctrinated. The majority of the Revolutionary Guards were recruited from Gaddafi's own tribe. They were headed by those people closest to him. For instance, the Elite 32 Brigade was

headed by Gaddafi's son Khamis, who held the rank of captain. Other security bodies were headed by two of Gaddafi's other sons, Mu'tasim-Billah and Saasi. According to the report by the Afro-Middle East Centre they were better equipped that the regular armed forces. Moreover, in numbers these groups outweighed the military. With 43,000 troops, the Libyan People's Militia alone was almost as large as the 50,000-person Libyan army (Sorenson, 2007, p. 103). In addition to the creation of quasi-military structures to balance the regular armed forces, Gaddafi also turned various branches of the military against each other. In the 1993 uprising of a splinter of the Libyan army, he used his air force (who were firmly in the grip of the Qadhadhafa tribe) to suppress the ground troops attack.

Similarly to Tunisia, the Libyan military had little invested in the continuation of Gaddafi's regime. When the rebellion kicked off earlier this year, it disbanded. According to some new reports Gaddafi was largely using foreign mercenaries to fight the rebellion (see, for example, Smith, 2011; Wyatt, 2011).

2.3.4 Monarchies

Herb (1999) distinguishes between two types of monarchies: dynastic monarchies "in which the royal family forms a ruling institution and those in which the monarch rules alone, without the participation of his family in the cabinet" (Herb, 1999, p. 8). He also acknowledges a third category, in which "members of the ruling family are allowed by the constitution to occupy high posts but not monopolize them" (ibid, p. 9). He points out that "no dynastic monarchy has fallen to revolution, while all of the monarchies in which the constitution prohibits royal participation in the cabinet have collapsed" (ibid).

Dynastic Monarchies

Dynastic monarchies include Saudi Arabia and the Gulf monarchies (Bahrain, Kuwait, Omar, Qatar and the United Arab Emirates). They have a major advantage over other types of monarchies (and, more generally, other types of autocracies): the unity and solidarity of their elite, i.e. the ruling family. In dynastic monarchies, "members of the ruling families monopolize the highest state offices, including the premiership and portfolios of Interior, Foreign Affairs and Defence […]. The ruling families also distribute members throughout lower positions in the

state apparatus, especially in key ministries" (Herb, 1999, p. 8). This gives members of the elite a vested interest in the continuation of the monarchy. This is clearly demonstrated during succession crisis: "members of the ruling family who are not in direct competition for the rulership will bandwagon and not balance, when succession disputes grow bitter. This bandwagoning ensures that the family does not split down the middle, thus exacerbating disputes and threatening the dynastic monopoly of the state power" (ibid, p. 10). This ability of the ruling family to regulate disputes internally has been instrumental to their survival.

Moreover, this allows the royal family to keep a tight grip over all major institutions, including the military. The royal family keeps a check on the military by filling the key posts with its members. Herb points out that "while the governments do not publish comprehensive rosters of their members in the armed services, it is well known that the dynasties distribute numerous princes and sheikhs throughout the officer corps. In the Saudi military their number is estimated to be in the hundreds. In Kuwait, where there are certainly fewer, they nonetheless keep a watch out for any signs of disloyalty in the military and man the guard that protects the emir. The Al Khalifa of Bahrain dominate the top positions in their military, occupying eight of the first ten positions in the Bahraini armed forces in 1994" (Herb, 1999, p. 34-5).

Kamrava (2000) highlights a further characteristic of dynastic monarchies: The monarchies of the Arabian Peninsula "are largely incapable of mobilizing armies whose sizes are sufficient for national defence" (Kamrava, 2000, p. 87). This has a number of reasons. With the exception of Saudi Arabia, the Gulf monarchies have small populations ranging from 3 million in Kuwait to 1.5 million in Qatar (Military Balance, 2011). Furthermore, these monarchies share a natural resource wealth which enables them to support a massive welfare state apparatus. Kamrava argues that the nature of rentier states is such that it does not lend itself to conscription (legitimization of rule by provisions of public goods – Brooker (2009) describes this "no representation without taxation"). As a result, all oil monarchies, except Kuwait, have refrained from introducing compulsory military service. Finally, a career in the military is not viewed as a socially prestigious, there being better opportunities in the private sector, and so few young men volunteer for the service (Kamrava, 2000, p. 88).

As a result oil monarchies have a tradition of recruiting officers and sometimes even soldiers from abroad. They are able to afford this thanks to their natural resource wealth. At officer level men are recruited from Britain – though they are never given command positions; at

junior level recruits are drawn from Egypt, Pakistan, India or Palestine. Moreover, the Gulf monarchies try to make up for their individual shortcomings by cooperating with each other in security matters through the Gulf Cooperation Council. When unrests grew in Bahrain earlier this year, Saudi Arabia sent troops to aid the Al Kalifa family in restore order. Finally, the Gulf monarchies make up for lack of manpower with sophisticated weaponry.

Civic myth monarchies

The civic myth monarchies include Morocco and Jordan. Civil-military dynamics in these countries differ from the other monarchies of the MENA region. Neither country is endowed with natural resources, and therefore do not possess the resources to support rent-based welfare states. Nor can they hire officers and soldiers abroad. (In fact, in contrast to the Gulf monarchies, both militaries rely heavily on conscription). Nor can they afford expensive, sophisticated weaponry, although it must be noted that Morocco has recently engaged in a series of weapon procurement programmes. Sorenson (2007, p. 108) suggests that King Mohamed VI "appears to understand that one part of his bargain with the FAR is to keep them equipped with modern arms". Moreover, he notes that the King turns a blind eye when senior officers take bribes. Such corruption is viewed as "a side payment for the military's loyalty" (ibid, p. 109).

Moreover, the Royal Families are much smaller and are unable to fill the upper ranks of military with family members alone. Key posts are still filled with members of the Royal Family, but they are not as dispersed. This has contributed to a certain degree of professionalization within the militaries, as they have to rely on career officers to run the forces. King Hassan II of Morocco did initially try to bring the Forces Armees Royal (FAR) into the royal patronage network, but after the 1971 and 1972 coup attempts he changed his strategy. Instead, he tried to keep the military busy with security issues. According to, Kamrava "both the Jordanian and Moroccan armies appear to benefit from considerable professionalism and discipline" (ibid, p. 90).

Nevertheless, in both countries the king is the nominal as well as the real commander of the armed forces. For example, King Hassan II of Morocco abolished the Ministry of Defence, putting the military directly und his command. Now the military reports to the crown through the Ministry of the Interior. Moreover, loyalty to the king is the sole criteria for promotion.

Interestingly, King Hassan II instituted conscription in order to change the ethnic makeup of the armed forces. During the coup years a large proportion of the Moroccan officers had been Berbers. By introducing conscription, he hoped to tip the balance in favour of more Arabs. However, conscription was ended in 2006 after security authorities discovered that five soldiers were members of Ansar al-Mahdi, a Jihadist group. According to one analyst, this move "aimed at mitigating the vulnerability of the lower ranks to the influence of radical Islam" (Sorenson, 2007, p. 109). These are two particularly interesting examples of targeted recruitment as a coup-proofing strategy.

Herb (1999) argues "the best way to keep the military out of politics is to make the monarchy popular in public opinion". In the words of Machiavelli (1950, pp. 67-68), "one of the most potent remedies that a prince has against conspiracies it that of not being hated by the mass of the people; for whoever conspires always believes that he will satisfy the people by the death of the prince; but if he thought to offend them by doing this, he would fear to engage in such an undertaking". Kamrava (2000) observed that Jordan and Morocco have adopted "loudly propagated but very limited processes of political liberalization". These include the legalisation of parties and a relaxation of restrictions on the press. Confirmation of this theory can be found in Morocco's willingness to introduce reforms in the face of protests linked with the Arab Spring. These included the drafting of a new constitution that was overwhelmingly approved in a referendum on July 1st 2011. However, at the time, observers argued that "the King has held onto most of his privileges, and critics say he has simply bought time before another wave of pressure mounts" (*The Economist*, July 14th, 2011, p. 49).

2.3.5 Triple Threat

Syria (1970-2011)

Syria experienced 15 successful coups between 1949 and 1970 before consolidating around Hafez Al-Asad, who himself attained power by means of a coup in 1970 (Quinlivan, 1999. P. 134). If anyone knows about the importance of coup-proofing, it should be Syria's leaders. Syria makes for quite a spectacular study of coup-proofing, as it combines the tactics of military regimes, one-party states, personalist dictators and monarchies. Syria is usually described as a presidential monarchy (for example by Hinnebusch 2011), but both the Ba'th party and the military are instrumental to the functioning of the regime. Moreover, since Hafez

al-Asad passed power onto his son, Bashar al-Asad, commentators note that the country is displaying more monarchical tendencies.

The regime rests on three pillars of power: the party apparatus, the military-police establishment and the ministerial bureaucracy. The President is the head of all three institutions: He is party secretary in general and commander in chief. The institutions are interconnected and overlapping, preventing either from becoming too powerful, as well as creating space to settle intra-elite disputes. For example, the Ba'th Party's Regional Command (RC) is roughly divided between senior military commanders, top party members, and the most principal cabinet ministers.

However, the military plays an especially important role in Asad's regime. It was Ba'th officers who brought Asad to power, thereby becoming an equal partner in the new state. Furthermore, Hinnebusch, (2011, p. 110) argues that "the legitimacy of Asad's regime was in good part based on its relative success in holding Syria's own against Israel, beginning with the 1973 Arab-Israeli war". Thus, the Syrian military, similarly to Algeria and Egypt, views itself as a legitimate political actor.

However, Asad was able to establish firm control over the military. As legal commander in chief, he controlled appointments and dismissals of senior officers. Appointments were based on political loyalty to the president. "A party document described the influx into the military as drawing on people recommended on the basis of friendship, family relationship, and sometimes mere personal acquaintance" (Quinlivan, 1999, p. 140). Soldiers are predominantly recruited from the Alawite tribe. The Alawites actually represent a minority in the Sunni Muslim dominated country and thus have much to gain from Al-Asad's patronage. In particular, Alawite Ba'th officers hold a disproportionate number of top operational commands, especially of potentially coup-making armoured units.

According to Hinnebusch, control of the military played a crucial role in enabling him to move beyond party ideology. However, it must also be noted the party is more than just a facade. Asad normally concentrated on foreign and security policy and left the details of economic matters to be decided by the party (ibid, 110). But more importantly, Asad instrumentalised the party to control the military. The military exercised is voice in politics through party institutions (for example through the regional congress in which about a third of its members

represented the military branches). This enabled the party to exercise some oversight of the military. Thus, Asad used these two institutions to control each other.

Asad also kept multiple intelligence services, who spied on, amongst others, the military, watching for signs of rebellion. These services were themselves tightly controlled: new members were thoroughly vetted and files were kept on them throughout their lives; promotions were based on loyalty; security chiefs were regularly rotated to prevent them from establishing autonomy; and most intriguingly, the services actually spied on each other. “The propagation of security agencies with overlapping charters creates a market with multiple sellers of security services and a single demanding buyer. This helps ensure that the services are both loyal and active” (Quinlivan, 1999, p. 149).

The succession of Hafez’s son, Bashir al-Asad, to the presidency posed new challenges for civil-military relations in Syria. Trained in medicine, Bashir has no background in party politics or the military. The succession was collectively engineered by the regime elite who, holding the top party and army positions, closed ranks to preserve regime stability and prevent an intra-elite power struggle. Thus they behaved not unlike the Royal Families in the Gulf.

Bashir Al-Asad’s succession was accompanied by a series of dismissals and retirements, as well as appointments and promotions. Three-quarters of the 60-odd officials in political, security and administrative ranks were replaced by the end of 2002 (Hinnebusch, 2011, p. 114). Old generals were replaced with a younger generation of officers who felt beholden to the new president.

At the time of writing, Syria is in its third year of a full scale civil war. The international community publically condemns Syria’s actions from the side lines, but has not intervened directly. UN peace talks, hosted in Geneva in early 2014, failed to reach an agreement, largely because Syrian authorities refused to discuss a transitional government. It is unclear how this situation will be resolved. However, so far, the military largely remains loyal to Al-Asad.

2.4 Conclusion

This chapter has compared coup-proofing strategies in military regimes, one-party states, personalist dictatorships and monarchies, drawing on examples from the MENA region. This

categorization has proven somewhat useful in determining patterns in civil-military relations. For example, the ideological indoctrination of militaries is more commonly found amongst one-party states. This is because one-party states are more likely to actually adhere to a coherent ideology. Moreover, the party apparatus provides it with the channels through which to disseminate this ideology. Examples include Iran and Syria. Personalist regimes often pursue divide-and-conquer strategies, exploiting ethnic and tribal differences where they exist and pitting multiple paramilitary forces against each other. In chapter 6, I shall use some of these insights to develop a theory to explain differences in military expenditure amongst different types of dictatorships.

However, the above comparative study highlights other important differences between regimes that may not be so easily captured by a strict regime categorisation. As discussed in chapter 1, an important determinant of civil-military relations is the role the military played in bringing the current regime to power. In countries where the military played a positive role, such as Syria, in which the dictator was brought to power by a military coup, or Egypt and Algeria, in which the military 'liberated' the country in an armed struggle, dictators are more likely to tend to secure the military's loyalty by ensuring it has a stake in the continuation of the regime. In countries where the military played no role in bring the regime to power, such as Tunisia, or actively resisted the regime, e.g. Iran, dictators are more likely to pursue repressive strategies.

A country's ethnic composition is another important determinant of civil-military relations, as is its access to natural resources. Both provide dictators with different coup-proofing options. The existence of external threats is another significant determinant of civil-military relations. Both Egypt and Iran tried to change their relations with the military after going through international conflict. Their experiences highlighted the need for a more professional military with an external focus. The consequence of coup-proofing is often the inability of the military to perform its most important task – defending the county's borders.

Regime categorisation is useful for the purpose of econometric analysis, as it allows us to capture certain characteristics of a regime using dummy variables. This will be my approach in the following chapters. The present chapter has given a more nuanced picture of possible determinants of civil military relations, too detailed to account for in econometric analysis. By combining econometric analysis with a comparative case study, I hope to give a more complete view of what determines civil-military relations.

3 Data

3.1 Introduction

This thesis uses data from the Stockholm International Peace Research Institute, the World Bank, the Correlates of War program, the Uppsala Conflict Data Programme, the Polity IV project and individual researchers. In addition, pre-1988 data on military expenditure for the MENA region was collected by me in cooperation with the Stockholm International Peace Research Institute. In this chapter, I introduce this data in detail.

This thesis uses a panel of up to 112 countries, in most cases covering the period 1960-2000[5]. The sample is based on countries for which sufficient data could be gathered on. Generally, more developed countries supply better data, so inevitably my sample is somewhat biased to developed countries. This is problematic in the context of this study is so far as the more developed countries also tend to be the more democratic ones, and this study is interested in dictatorships. A key dictatorships missing in this sample is the USSR. However, it might be argued that the USSR is likely to be an outlier, and including it in the sample may skew relationships.

My period of analysis is limited by the availability of data for certain key variables. This chapter is organised as follows: in section 2, I present the data on military expenditures and describe

[5] Chapter 6 covers the period 1960-2010.

my own data collection process; in section 3, I discuss the various measures of regime type; in section 4, I present all other data used throughout this thesis.

3.2 Military Expenditure

3.2.1 Stockholm International Peace Research Institute

The Stockholm International Peace Research Institute (SIPRI) database on military expenditure covers 172 countries and contains consistent data for the period since 1988. SIPRI updates its database annually. This thesis uses two versions of SIPRI's military expenditure: the 2011 version[6] (used in chapters 3 and 5), which was the most recent version available when I began my thesis; and the 2012 version[7] (used in chapters 4 and 6), which was the latest version available when I began work on my final chapter. The 2011 version contains data on military expenditures in constant 2009 USD available up to 2010 (2009 for the share of GDP); the 2012 version contains data on military expenditures in constant 2010 USD available up to 2011 (2010 for the share of GDP). The change in base year results in some discrepancies between the absolute figures of each dataset; however the percentage changes from one year to the next remain largely consistent across both datasets (see table 3.A1 in the appendix for a comparison of the 2011 and 2012 versions for a randomly selected sample of countries). It should be noted that according to SIPRI "the choice of base also has a significant impact on cross-country comparisons of military expenditure data because different national currencies vary against the dollar in different ways" (SIPRI 2013b)[8]. SIPRI prioritizes consistency over time for each country over comparability between countries. It notes that "while comparability between countries is sought as far as possible, this is given lower priority, as consistency over time is necessary to be able to assess trends in spending, and as the variations in reporting data by different countries is so great as to render full cross-country comparability unachievable" (SIPRI 2013a). In addition, data are subject to continuous revisions, which can

[6] SIPRI (2011), SIPRI Military Expenditure Database, Stockholm International Peace Research Institute, [online] latest version available at <http://www.sipri.org/research/armaments/milex> [accessed on 06/05/2011].
[7] SIPRI (2012), SIPRI Military Expenditure Database, Stockholm International Peace Research Institute, [online] latest version available at: http://www.sipri.org/research/armaments/milex/milex_database [accessed on 14/08/2012].
[8] Note: when between 2009 and 2010, the dollar falls (rises) against the currency of country A, military expenditure of country A expressed in constant 2010 USD will be higher (lower) than when expressed in 2009 USD.

be extensive, and may result in further discrepancies for individual countries in individual years.

Definition

SIPRI notes that "the lack of sufficiently detailed data makes it difficult to apply a common definition of military expenditure on a worldwide basis". Nevertheless, SIPRI has adopted a definition as a guideline:

> Where possible, SIPRI military expenditure data include all current and capital expenditure on: (a) the armed forces, including peacekeeping forces; (b) defence ministries and other government agencies engaged in defence projects; (c) paramilitary forces, when judged to be trained and equipped for military operations; and (d) military space activities. Such expenditures should include: (a) military and civil personnel, including retirement pensions of military personnel and social services for personnel; (b) operations and maintenance; (c) procurement; (d) military research and development; and (e) military aid (in the military expenditure of the donor country). Civil defence and current expenditures on previous military activities, such as veterans' benefits, demobilization, conversion and weapon destruction are excluded." (SIPRI 2012).

Problems

SIPRI relies only on open sources, including official documents and questionnaires. According to SIPRI, while the majority of countries publish at least basic military budget information, this data may be subject to a number of problems, including the problems of comparability and reliability.

As mentioned above, comparisons between countries and over time are complicated by the fact that countries employ different definitions of military expenditure. SIPRI state that "while SIPRI always seeks data as close as possible to the SIPRI definition, including by finding additional sources of data to the main published defence budget where possible, this is not always available" (SIPRI 2013a). The problem of comparability is exacerbated by the fact that many countries provide only limited information on military expenditure. It is often unclear what is or is not included in military expenditure figures (such as spending on paramilitaries,

veteran pensions and benefits, etc.), whether definitions have changed over time, whether figures are for actual or budgeted expenditure, etc.

The problem of reliability arises because

> In some countries, especially poorer countries with limited state capacity, there may be weak systems for financial monitoring and control in the military sector and elsewhere. Actual levels of expenditure may be incompletely recorded, or actively falsified due to corruption or otherwise. Some governments may also seek to disguise the true level of expenditure, for example for the benefit of donor countries and institutions. Poor financial discipline may allow ministries or armed services to overspend their budget without sanction. In a number of cases, only budgeted expenditure figures for the military may be available, rather than actual expenditure, which may be substantially different (SIPRI 2013a).

Moreover, in some cases, military expenditure may be funded from a number of extra-budgetary or off-budget sources. Military expenditure may be financed from other lines within the overall state budget or from outside the regular state budget. For example, arms imports and sometimes other military spending are frequently financed from dedicated accounts for natural resource revenues – an issue I shall explore in detail in chapter 6.

Finally, a major problem - from the perspective of this thesis in particular – is SIPRI's lack of reliable data prior to 1988. Years prior to 1988 are important for this research, as they yield so many more examples of dictatorships. I address this problem in two ways: in chapter 3-5, I combine SIPRI data on military expenditure with data from the Correlates of War (COW) National Material Capabilities dataset. The precedent for this was set by Nordhaus, Oneal and Russet (2012). In chapter 6, which focuses on the MENA region, I used figures from the SIPRI archives, which I collected during a one month research visit under the supervision of the head of the Military Expenditures Project, Sam Perlo-Freeman. In the next two sections, I shall first discuss the COW military expenditure data and then explain the process of backdating SIPRI's military expenditure data.

3.2.2 Correlates of War Project

Coverage

The Correlates of War (COW) National Material Capabilities dataset includes data on military expenditures from as early as 1816 for some countries and until 2001. Data are available in current USD, and I convert them first into constant USD using US CPI (with 2005 as the base year), and then to the share in GDP by dividing through constant (2000) GDP in USD taken from the World Bank World Development Indicators.

Definition

COW defines military expenditure "as the total military budget for a given state for a given year". However, the organization states that its main interest in collecting data on military expenditure was "to index all financial resources available to the military in time of war". Their focus, therefore, is on a country's fighting capacity. COW includes "all resources devoted to military forces that could be deployed, irrespective of their active or reserve status" in their definition of military expenditure. It excludes "all appropriations of a non-military character because some nations have civil ministries under military control (national police forces is the most prevalent example), [and] the use of such unadjusted budgets would substantially over-estimate the military capability of those nations". Moreover, COW distinguishes which figures going for military purposes were destined to enhance capability. Thus they exclude expenditures on pensions, superannuation pay, relief, and subsidies to widows and orphans from their definition of military expenditure as they "do not contribute to military power".

Problems

COW data on military expenditure is subject to the same problems SIPRI data is. In addition, the Correlates of War project is less meticulous about documenting its data collection process than the Stockholm International Peace Research Institute is, and is thus generally considered less reliable.

In addition, the question arises as to whether COW and SIPRI data are compatible and can be combined. Although Nordhaus et al (2012) set the precedent for doing so, it is worth examining this issue in more depth. To get a picture of the compatibility of SIPRI and COW data, I examine their ratio in 1988 and subsequent years in which a reasonable amount of overlapping data is available. Table 3.A2 summarizes this information. The mean ratio is close to one. One would not expect a ratio exactly equal to one because of SIPRI and COW use different base years (see above).

From the histogram (figure 3.A1) one can see that the distribution of the SIPRI/COW ratio in 1988 is affected by outliers. A closer examination of these outliers gives interesting insights into the compatibility of the two sources. For example, Brazil, Columbia, Lebanon, Poland and Turkey all have SIPRI/COW ratios greater than 3 in 1988. However, in subsequent years, these ratios decrease and roughly converge to one. I suspect that this is because after 1988 data collection improves, and data generally become more accessible, thus reducing discrepancies between sources that are the result of inaccuracies. Furthermore, after 1988 COW actually collects data from SIPRI amongst others, so there is a direct overlap in some instances.

One inconsistency between SIPRI and COW data becomes obvious when examining the minimum value, which is 0. This is an unusual number to arrive at when taking ratios. This figure corresponds to Costa Rica, which SIPRI sites as having zero military expenditure, while COW estimates Costa Rica's military expenditure as being in the range of ten thousand. This divergence may be the result of varying definitions which include/exclude paramilitary spending, pensions, spending on R&D, etc.

To account for such discrepancies between SIPRI and COW data, I use a dummy in all my regressions, which equals one when the data source is SIRPI. However, this dummy must be interpreted carefully. In addition to picking up differences in the sources, it will pick up a "Cold War effect" because the SIPRI data corresponds with the post Cold War era. In chapter 4, I address this issue, by testing for structural stability. I also run separate regression using only COW data (covering the period 1960 to 2000) and only SIPRI data (covering the 1988 to 2000).

3.2.3 Backdating SIPRI's Military Expenditure Data

SIPRI publishes figures on military expenditure from 1988 onwards. While earlier data can be found in the SIPRI Yearbooks, "various changes in methodology and an unfortunate loss of source material detailing where earlier data was from" render this data inconsistent[9]. Moreover, SIPRI cautions that "military expenditure data from different volumes of the SIPRI Yearbook should not be combined because of data revision between volumes"[10]. However, SIPRI is currently engaged in an ongoing project to extend the SIPRI military expenditure database back to 1949. I spent a month as a guest researcher with the Military Expenditure Project under the supervision of Sam Perlo-Freeman, working on this project. I searched the SIPRI archives to uncover information about earlier military expenditure figures, which I then verified. As a result of these research efforts, I am able to present here figures for the MENA region from the 1960s (or from independence, if this occurred later) onwards. In the following paragraphs, I give a brief account of how we compiled this figures.

Our starting point was SIPRI's private electronic database, in which is noted for each year from 1988[11] to present current military expenditure in local currency units (LCU) and the original source for this figure. In addition, SIPRI's archive contains hardcopies of various statistical yearbooks, official government documents, newspaper clippings and handwritten notes dating back to as early as the 1950s.

From this archive, we collected data on current military expenditure in local currency units (LCU) for each country for years prior to and including 1988 from various sources: the UN Statistical Yearbooks (UNSY), the Government Finance Statistics Yearbook (GFSY) of the IMF, the European Yearbooks (EUYB), USAID Yearbooks, the German Statistik des Auslandes (SAUS), the Arab Report and Record (ARR), as well as various official government documents such as Central Bank or Ministry of Finance reports. The aim of this exercise was to collect as many data points for each country, ideally with some overlapping years to enable the comparison of figures from different sources.

The next step was to try to take the existing SIPRI series backwards by matching the 1988 figure with one of the above sources. We encountered three scenarios:

[9] http://www.sipri.org/research/armaments/milex/copy_of_faqs#4-why-does-the
[10] http://milexdata.sipri.org/
[11] In some cases the original series started earlier.

1. In some cases, earlier data from the same source as the existing SIPRI series were found, making it possible to take the series back directly up to a certain point. For example, the existing series for Kuwait dates back to 1984 and the original source is GFSY for 1984 and up until 1998. Going through older GFSYs, we were able to locate earlier data covering the years 1972-1984 (with a missing year in 1975). Because the source was the same, these data points could be added to the existing series without concerns over compatibility.

2. In other cases, while earlier data from the same source could not found, data from an alternative source, in which the 1988 figure was identical with the one from the existing SIPRI series, were found. In these cases the existing SIPRI series was taken back directly using the alternative source.

3. Finally, in some cases, while data prior to 1988 was available, no identical overlapping figures could be found. In these cases, we calculated the percentage difference between the existing SIPRI figure and the alternative figure and applied this percentage in backdating the existing SIPRI series using the alternative data. An example helps to illustrate this process: the existing SIPRI series for Bahrain dates back to 1974 and the original source is GFSY for 1974 to present. Research in the SIPRI archives uncovered earlier data collected by USAID. The latest available USAID figure was for 1974, so we were able to compare the two sources. GFSY's estimated Bahrain's military expenditure to 9.3 million Dinar in 1974, whereas USAID approximated it at 7 million. We calculated that GFSY's figure is 132.86% of USAID's figure (9.3/7*100=132.86). For earlier years, we worked out what 132.86% of each USAID data point was, thus backdating the existing SIPRI series.

Following the various procedures outlined in these three scenarios, we backdated the existing SIPRI series as far as was possible. Having completed this, it was necessary to convert the current LCU figures into constant dollars in order to make the series comparable amongst each other. Data on CPI and the exchange rates for the base year (usually 1995[12]) were taken from the IMF International Finance Statistics, supplemented where necessary with data from the IMF World Economic Outlook and the World Bank. SIPRI procedure entails first converting each current price local currency series into constant price local currency for the chosen base

[12] For Iraq, Oman and Qatar the base years were 2005, 2000 and 2000, respectively.

year, and then converting them into US$ at the market exchange rate for the base year[13]. It must be noted that CPI data was not available for every year for which we collected military expenditure data, so the constant dollars military expenditure series is shorter than the current LCU one. In addition, we converted fiscal years to calendar years where necessary. Table 3.1 outlines the military expenditure data that is now available.

Table 3-1 Overview of military expenditure data for MENA region available as a result of backdating efforts

Country	Existing SIPRI series	backdated series in current LCU	backdated series in constant USD
Algeria	1988-present	1960-2010; missing 1962	1969-2010; missing 1962
Bahrain	1971-present	1971-2011	1971-2011
Egypt	1988-present	1961-2010	1962-2010
Iran	1988-2008	1959-2008	1960-2008
Iraq	2004-present	1960-1981; 2004-2011	2004-2011
Israel	1988-present	1959-2010	1960-2010
Jordan	1988-present	1960-2011	1970-2011
Kuwait	1984-present	1969-2011	1973-2011
Lebanon	1987-present; missing 1989	1960-2011; missing 1989	1980-2011; missing 1989
Libya	1997-2008	1960-1982; 1997-2008; missing 2002	1965-1982; 1997-2008; missing 2002
Morocco	1988-present	1960-2010	1960-2010
Oman	1980-present	1971-2011	1980-2011
Qatar	2002-2008	1980-1991; missing 1986; 2002-2008	1981; 1987-1991; 2002-2008
Saudi Arabia	1981-present	1960-1973; 1977-2011; missing 1986	1960-1973; 1977-2011; missing 1986
Syria	1986-present	1960-2011; missing 1963	1961-2011; missing 1963
Tunisia	1988-present	1960-2010	1980-2010
UAE	1997-2010	1997-2010	1997-2010
Yemen	1988-2008	1972-2008	-

Figures for the period 1988-2010 are in constant 2010 USD. It should be noted that as a result of the different base years, there are (substantial) differences between the official SIPRI series

[13] See appendix B for a more detailed description.

and my backdated series in the years they overlap. Unfortunately it was not possible to simply convert all data into the same base year, as CPI data is not available for all countries. However, it was possible to verify using a selection of countries for which CPI is available that these differences are consistent and disappear when converted into the same base year. Table 3.A3 shows this for the example of Libya.

3.3 Regime Type Data

3.3.1 Polity IV Project

Coverage

The Polity IV dataset covers all major, independent states in the global system (i.e., states with total population of 500,000 or more in the most recent year; currently 167 countries) over the period 1800-2012.

Definition

The Polity scheme is a discrete ordinal scale measure that examines concurrent qualities of democratic and autocratic authority in governing institutions. It is different from other measures of democracy in that it does not categorize countries into mutually exclusive forms of governance (e.g. democracy/autocracy). The Polity Score places countries along a spectrum of regime authority that spans from fully institutionalized autocracies through mixed, or incoherent, authority regimes (termed "anocracies") to fully institutionalized democracies. It ranks countries according to a 21-point scale ranging from -10 (strongly autocratic) to +10 (consolidated democracy).

> "The Polity scheme consists of six component measures that record key qualities of executive recruitment, constraints on executive authority, and political competition. It also records changes in the institutionalized qualities of governing authority. The Polity data include information only on the institutions of the central government and on political groups acting, or reacting, within the scope of that authority. It does not include consideration of groups and territories that are actively removed from that authority (i.e., separatists or "fragments"; these

> are considered separate, though not independent, polities) or segments of the population that are not yet effectively politicized in relation to central state politics" (Polity IV).

Problems

Although widely used, discrete ordinal scale measures of democracy, such as Polity IV[14] have been subject to criticism. Measures like Polity IV capture many aspects of politics with one single number. Gleditsch and Ward (1997, p.380) argue that this conflates important differences: "vastly different temporal, spatial, and social contexts support the same autocracy scale value". For example, the Chinese communist regime, the Burmese military dictatorship, and the monarchy of the United Arab Emirates have all at some point in time held the same Polity IV score, yet the institutional differences between these three dictatorships could not be more pronounced. Cheibub, Gandhi and Veerland (2010) add that this makes it harder to specify the causal mechanisms that link regime and the outcomes of interest. They argue that the primary purpose for the categorization of political regimes is the conduct of empirical research and that "a measure of democracy based on a minimalist conception is compatible with most theoretical issues that motivate empirical research on political regimes" (Cheibub, et al. 2010, p. 72). The Polity Score can be converted into regime categories[15]; however, according to Cheibub et al. (2010), this is somewhat arbitrary. Finally, the authors note that that information required to update the various component measures can be extremely difficult to obtain and is highly subjective.

On the other hand, it can be argued that categorical measures of regime type (such as Cheibub et al's democracy/autocracy dichotomy) equally obscure important information. Categorizing countries into either democracies or autocracies implicitly assumes that all democracies/autocracies are equal. It seems reasonable to argue that some democracies are more democratic than others, etc.

In my thesis, I address this issue by using both a discrete ordinal scale measure (Polity IV) and a categorical measure (Reich's Political Regime Change measure) and compare the results. In addition, in chapter 5, I further dissect the category of autocracy into sub-categories

[14] Other examples include the Freedom House Index and Bollen's (2001) indicator of liberal democracy.
[15] Marshall and Jaggers recommend a three-part categorization of "autocracies" (-10 to -6), "anocracies" (-5 to +5), and "democracies" (+6 to +10)

(military/single-party/personalist) which capture different institutional arrangements within a dictatorship. In the following sections, I shall introduce these two measures.

3.3.2 Reich's Political Regime Change Dataset

Coverage

Reich (2002) updates Gasiorowski's (1995) dataset on political regime changes (PRC) through to 1998. The dataset covers "every independent nation-state in the world that had a population of at least one million citizens by 1980 and those established after 1980 that had a population of more than one million; each country is coded from the date of independence or, in cases in which the country had not been colonized, with the date at which a modern nation-state was established" (Reich 2002, p. 8). Reich provides both the month and year in which the regime change takes place. As a result, the PRC dataset records cases in which more than one regime change occurred within the same year. As I require my data to be annual, I code these cases as the regime type that the country was for the longest part of that year.

Definition

Reich (2002) dataset on political regime changes categorizes regimes as democratic, semi-democratic and authoritarian according to the definitions outlined by Diamond, Linz and Lipset (1990).

> Democracy: A regime in which (i) meaningful and extensive competition exists among individuals and organized groups for all effective positions of government power, at regular intervals and excluding the use of force; (ii) a highly inclusive level of political participation exists in the selection of leaders and policies, such that no major (adult) social group is excluded; and (iii) a sufficient level of civil and political liberties exists to ensure the integrity of political competition and participation.
>
> Semi-democracy: A regime in which a substantial degree of political completion and freedom exists, but where the effective power of elected officials is so limited, or political party competition is so restricted, or the freedom and fairness of elections are so compromised that electoral outcomes, while competitive, still deviate significantly from popular preferences;

and/or civil and political liberties are so limited that some political orientations and interests are unable to organize and express themselves.

Authoritarian: A regime in which little or no meanlingful political competion or freedom exists (Reich 2002, pp. 6-7).

Problems

One drawback of the PRC data is its limited coverage – 102 countries, 1960-1998. However, this dataset represents one of the most rigorous attempts at classifying regimes, relying on extensive analysis of primary sources in cooperation with regional and country experts. A strength of this dataset lies in the fact that it is designed "specifically for the purpose of classifying regimes, providing a single, categorical measure of regime type, instead of leaving the researcher the task of designing such a variable from the data that may not be easily or meaningfully transformed into a categorical measure" (Reich, 2002, p. 18). Therefore, I use this dataset in spite of the fact that it limits the time period I am able to study.

Reich assesses the empirical validity of his dataset by comparing the PRC codings to other datasets commonly used to classify regimes. Amongst others, he finds that the PRC regime score and the Polity IV democracy-autocracy score show a positive correlation of r=0.86 (Reich, 2002, p. 14). More generally he finds that his codings are consistent with those from existing datasets that also measure regime characteristics. However, he concedes that “correlations can also conceal important differences. Because all regimes tend to be relatively stable from year to year, rank correlations are typically quite high among regime datasets: the vast majority of codings register no change, inflating measures of association” (ibid, p. 17). He therefore also compares regime *transitions* in the PRC dataset with other datasets (in particular the ACLP dataset compiled by Alvarez et al (1999) and the Freedom House score), and finds some differences.

Similarly, I compare regime transitions in the PRC dataset with the Polity IV dataset. To do this, Polity IV is transformed into a categorical variable according to the guidelines set out by the Polity IV project: countries that score –10 to –6 are coded as autocracies; countries that score –5 to +5 are coded as semi-democracies; countries that score +6 to +10 are coded as democracies. Table 3.A4 summarises the information on transitions in each dataset.

PRC contains a total of 2052 observations, whereas Polity IV only codes 1629. Of these observations the majority represent so-called "non-transitions", i.e. no transition between regime categories takes place. As a percentage of total observations, non-transitions in the PRC and Polity IV datasets are similar. However, there are some notable differences between the two datasets regarding the coding of actual transitions. These relate mainly to the middle category, semi-democracy.

As a percentage of total observations, Polity IV codes nearly twice as many transitions from autocracy to semi-democracy (4.54%) compared with (2.14%), and only one third of transitions from autocracy to democracy (0.55%) compared with (1.71%) as PRC does. As a percentage of total observations, Polity IV codes nearly twice as many transitions from semi-democracy to democracy (5.09%) compared with (2.34%), as well as twice as many transition from democracy to semi-democracy (1.38%) compared with (0.37%). These differences are likely to be linked to the definition of semi-democracies. Whereas Reich codes countries on a case by case basis, Polity IV uses more or less arbitrary cut-off points to define semi-democracies. This comparison supports the point made above that one of the strengths of Reich's dataset is the fact that it is designed specifically for the purpose of classifying regimes. Reich (ibid, p. 18) notes that "these differences are likely to be most important precisely in the area of most interest to researchers: the measurement of regime change". This point is particularly important for chapter 4, which studies regime change.

Finally, in addition to the general question regarding whether to use a continuous or a categorical measure of democracy discussed above, there is the more specific issue of how many categories regimes should be classified into. Cheibub, Gandhi and Veerland's (2010) Democracy-Dicatorship (DD) advocate a dichotomous measure. However, research on democracies and dictatorships has found that so-called anocracies/hybrid regimes/semi-democracies behave differently from both full democracies and autocracies. Moreover, empirical studies have found that the inclusion of a third middle category makes a significant difference for results (see, for example, Epstein et al 2006).

3.3.3 Ezrow and Frantz's Tyrants Dataset

Coverage

Ezrow and Frantz (2011)[16] identify 208 autocratic regimes during the period 1946 to 2010. They categorise each regime as personalist, single-party, military, monarchic or hybrid. Figure 3.1 shows the number of countries that fall into each regime type by year. Single-party states are the most prevalent form of autocracy through the whole period, followed by the other pure form autocracies - personal dictatorships, military regimes and monarchies, respectively. There are fewer cases of mixed regime types than pure form autocracies. Because the number of observations by year for each mixed regime type is low, I only study pure form autocracies in this thesis.

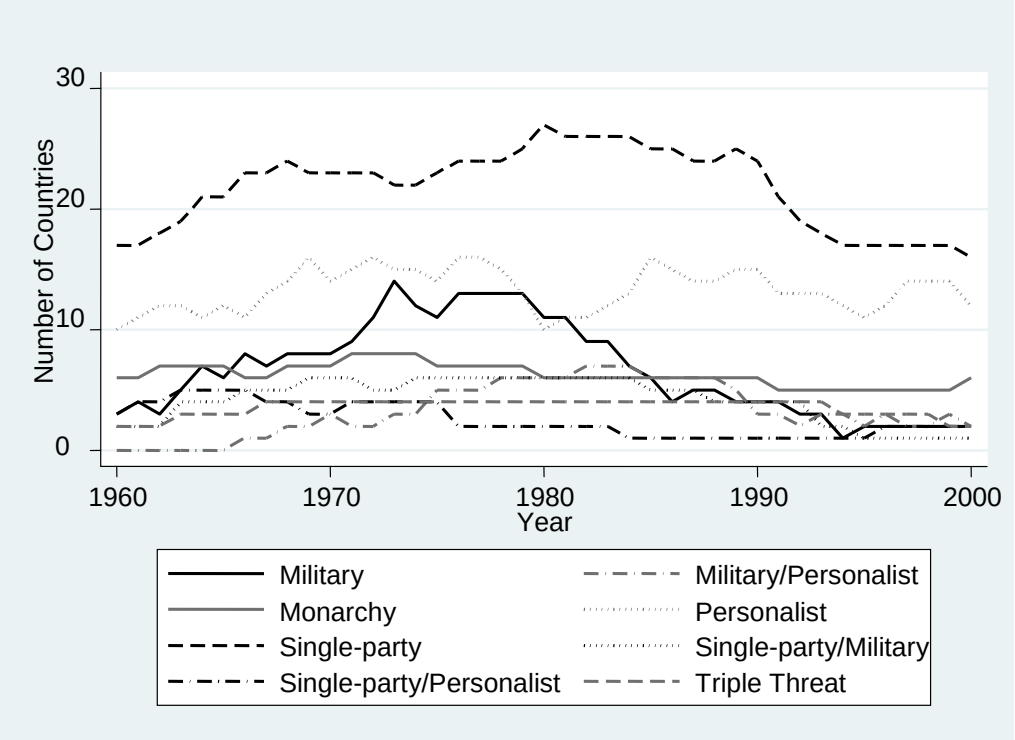

Figure 3-1 Distribution of autocratic regime types in Ezrow and Frantz's Tyrants dataset

[16] Ezrow and Frantz's (2011) dataset is a precursor to Geddes, Wright and Frantz (2012), which, at the time of analysis was not publicly available, but generously shared with me by Natasha Ezrow. There may be slight differences between the version provided to me and the version now publicly available (for example, single-party regimes are later referred to as dominant party regimes, and there are additional regime types), but these differences should not affect the results of my analysis.

Definition

Ezrow and Frantz's (2011) definitions are based on Geddes (2003), who categorizes autocracies according to whether "control over policy, leadership selection, and the security apparatus is in the hands of one-party (single-party dictatorships), […] the military (military dictatorships), or a narrower group centred around an individual dictator (personalist dictatorship)" (Geddes, Wright and Frantz (2012, p. 8). The emphasis is on the set of formal and informal rules for choosing leaders and policies. "These rules determine the group from which leaders can be drawn and who influence policy" (ibid, p. 2).

Problems

There are a number of alternative categorizations of autocracies, and thus a problem arises as to which measure to choose. To the best of my knowledge there exist three alternative categorizations of autocracies.

Lai and Slater (2006) break down autocratic regimes along two dimensions: *despotic power* and *infrastructural power*. *Despotic power* refers to the question of who makes decisions. Despotic power can be autocratic or oligarchic, i.e. decisions can be made by a single person or a group. *Infrastructural power* concerns the issue of who executes decisions. Decisions can be executed by a party or the military. Thus, the authors sort autocratic regimes into one of four categories: *machine, bossism, junta and strongman*. *Machines* and *juntas* are comparable to Geddes single-party states and military regimes, respectively. However, Geddes final category, personalist regimes, is broken down according to whether the personalist dictator relies on a party or the military to execute his decisions. Lai and Slater's approach of further breaking down personalist regimes is helpful in that it avoids Geddes's problem of having to categorize some regimes as hybrids. However, I disagree with the authors' notion that "a regime ultimately depends on a party or a military apparatus to maintain political control" (Lai and Slater 2006, p. 115). I argue that there is, in fact, such a thing as a purely personalist regime, in which parties and militaries are so constrained in their power that they are reduced to meaningless fronts.

Hadenius and Teorell (2007, p. 146) identify regimes based on what they call "modes of maintaining power", distinguishing between: 1) hereditary succession, or lineage; 2) the actual

or threatened use of military force; and 3) popular election, which, in turn, correspond to three generic types of regime: monarchy, the military regime, and the electoral regime. Electoral regimes are broken down into no-party regimes, one-party regimes and limited multiparty regimes, thus, allowing the authors to identify five main autocratic regime types. In addition, the authors identify a number of minor types of authoritarian regimes, including rebel regimes, theocracies, transitional regimes, etc. Overall, they identify 13 minor regime types. While this is very detailed, from the perspective of regression analysis this is not practical, as having too many categories results in too few observations per category. Moreover, like Lai and Slater (2006), Hadenius and Teorell (2007) reject personalism as distinct category. They argue that personalism is "a continuous trait that may be more or less present in a regime" (Hadenius and Teorell, p. 145). The degree of personalisation characterising a regime is measured by the frequency with which the head of government is replaced. As mentioned above, I argue that personalism is a distinct category.

Finally, Cheibub, Gandhi and Veerland (2010, p. 87) distinguish dictatorships according to the "nature of executive office". They differentiate between monarchies, military regimes and a residual category, which they refer to as "civilian regimes". This categorisation is based on characteristics of the ruling elite: "Monarchs rely on family and kin networks along with consultative councils; military rulers confine key potential rivals from the armed forces within juntas; and, civilian dictators usually create a smaller body within a regime party—a political bureau—to coopt potential rivals" (Cheibub et al. 2010, p. 84). I argue that grouping all non-monarchic and non-military regimes into one category conflates important differences between regimes, in particular the way they deal with the military - a point I shall elaborate on in chapter 5.

In addition, Geddes et al (2012) point out a number of problems with the Cheibub et al.'s dataset. For example, while Ezrow and Frantz code regimes as military when dictators govern in collaboration, Cheibub et al. code as military all autocracies led by men who have ever been officers. Why this may be problematic for our research is illustrated by an example cited by Geddes et al (2012): "This means that the Ugandan dictatorship led by Idi Amin from 1971 to 1979 is coded as military by Cheibub et al. but personalist in our data set because Amin marginalized the military from highest level decision making"[17]. Given that the theory developed in chapter 6 specifically mentions the marginalisation of the military in personalist

[17] Ibid, 17-18.

regimes, this is example suggests that Cheibub et al.'s dataset is let suited to the purpose of this research.

I believe that Ezrow and Frantz's dataset is most suited to my research. In particular, it is based on Geddes's (1999) categorization. Geddes's research is about authoritarian breakdown, and she created this categorization with that in mind. Because my research is also ultimately about authoritarian survival, I think it is appropriate to use the same categorization.

Finally, it must be noted that there are some discrepancies between Ezrow and Frantz's and Polity IV's categorisation of dictatorships: there are a number of examples in which countries are coded as dictatorships by Ezrow and Frantz, but score 7 or above (at which point countries can be classified as democracies) on Polity IV. Table 3.A5 lists all examples of countries that a categorised as either a military, single-party of personalist dictatorship by Ezrow and Frantz, but score 7 or above on Polity IV. These differences highlight the difficulties involved in categorizing countries.

3.4 Other Data

3.4.1 Military Involvement in Politics

The International Country Risk Guide's (ICRG) measures, amongst others, political risk. The aim of the political risk rating is to provide a means of assessing the political stability. The Political Risk Rating comprises twelve components, one of which measures the military's involvement in politics. According to the ICRG's methodology "the military is not elected by anyone. Therefore, it's involvement in politics, even at a peripheral level, is a diminution of democratic accountability".

Countries are rated on a continuous scale from 1-6, with lower numbers indicating a greater degree of military participation in politics. Unfortunately, the ICRG does not provide a detailed outline of the methodology by which these ratings are arrived at on its website. However, factors that are considered are military involvement as a result of internal or external threat; the threat of military take-over; and the existence of a full-scale military regime. Finally, the ICRG explains that "in some cases, military participation in government may be the symptom rather than a cause of underlying difficulties".

Data dates back to 1984. For this reason, as well as the lack of methodological transparency, the ICRG dataset is used only for robustness checks.

3.4.2 Wars and Threats

Dummy variables on wars - internal and external - are from the Correlates of War Project. COW defines war as sustained combat, involving organized armed forces, resulting in a minimum of 1000 battle-related deaths per year (Sarkees, 2011). Intra-state (civil) wars refer to those that predominantly take place within the recognized territory of a state. Inter-state wars refer to those that take place between states.

Data on wars from the Correlates of War project are available up until 2007. In chapter 7, I study the linkages between military expenditure and natural resource revenues in the MENA region over the period 1988-2010. It was therefore necessary to enhance COW data on wars with data from the Uppsala Conflict Data Programme (UCDP) for the last three years. UCDP similarly defines war as resulting in a minimum of 1000 battle-related deaths in one calendar year.

In chapter 7, I use an additional variable, called “tension”, which captures factors where a country is not at war but faces major threats or perceived threats from hostile neighbours, wars in neighbouring countries, or the threat of renewed conflict following a war. This variable was created by Perlo-Freeman specifically for the paper Brauner and Perlo-Freeman (2014), a working paper on which chapter 7 is based. It attempts to give a rough qualitative indication of the rising or falling level of threat coming from such factors. The tension variable is not intended to be comparable between countries, but is intended to capture changes over time. Some of the factors taken into account for different countries include:

- Various minor conflicts short of war (including Algeria, Israel/Palestinian territories, Lebanon, Morocco/Western Sahara when these countries were not in a state of 'war' according to the 1000 BRD criterion);

- Tensions between Algeria and Morocco following the Moroccan invasion of Western Sahara;

- Tensions in the Gulf region resulting from hostility between Iran and Gulf states following Iran's Islamic Revolution in 1979;

- Ongoing tensions in neighbouring countries following the Gulf War of 1991;

- Tensions following the US-led invasion of Iraq in 2003; the latter of particular significance for Iran and Syria due to fears that they might become future target for US forces;

- The Arab-Israeli conflict, in particular for Egypt, Iraq, Israel, Lebanon, Jordan and Syria;

- Libya's engagement in Chad, and the US bombing of Tripoli in 1986.

For each of the situations listed above, countries were given a value between 0-5, with a higher number indicated a greater potential threat. Each country's overall threat score is the sum of the threat scores from each individual situation[18]. The tension variable was assigned a value of zero when the 'war' variable is set to 1, as the latter should be capturing the security threat posed by such extreme events. The variable is a subjective judgment based on considerable familiarity with the region. Though admittedly ad hoc, given the lack of an alternative measure of latent threat, it must suffice.

3.4.3 Economics Data

In chapter 7, I use three measures of natural resource rents, taken from the World Bank's World Development Indicators: total natural resource rents, oil rents and natural gas rents. The World Bank defines oil rents as "the difference between the value of crude oil production at world prices and total costs of production"; natural gas rents are "the difference between the value of natural gas production at world prices and total costs of production"; and total natural resources rents are "the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents". All figures are expressed in percentages of GDP.

[18] Theoretically there is no upper limit on the value the overall threat score can take. In practice, the highest value any country takes is 8 (Israel 1988-1990).

Finally, data on GDP per capita (in 2000 constant US Dollars) and total population are from the World Bank World Development Indicators; and data on openness, defined as exports plus imports divided by GDP (in 2005 constant US Dollars) are from the Penn World Table.

3.5 Appendix to Chapter 3

3.5.1 Figures and Tables

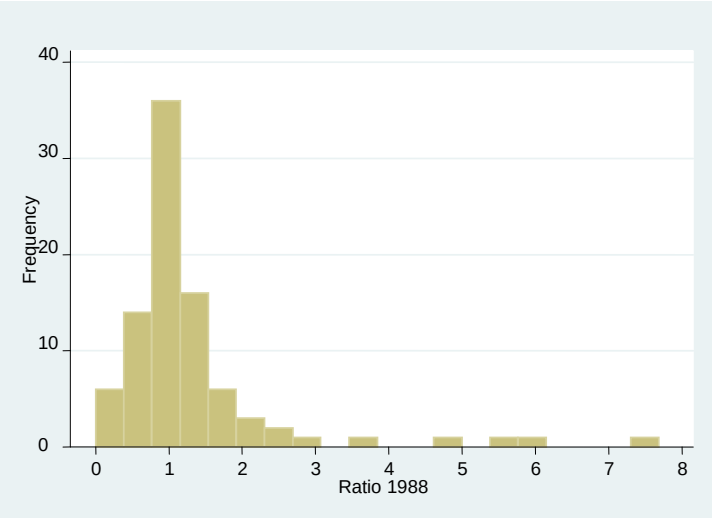

Figure 3-A1 Histogram of ratio of SIPRI to COW data in 1988

Table 3-A1 Comparison of 2011 and 2012 versions of SIPRI military expenditure datasets

Year	Algeria				Angola				Belize			
	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)
1988	662		672		. .		. .		4.9		4.9	
1989	647	-2.27	657	-2.23			. .		6.8	38.78	6.8	38.78
1990	691	6.8	702	6.85	. .		. .		7.2	5.88	7.3	7.35
1991	708	2.46	718	2.28	147		152		7	-2.78	7.1	-2.74
1992	1184	67.23	1202	67.41	128	-12.93	133	-12.5	7.6	8.57	7.7	8.45
1993	1274	7.6	1292	7.49	2055	1505.47	2133	1503.76	8.7	14.47	8.8	14.29
1994	1549	21.59	1572	21.67	. .		. .		11	26.44	11.1	26.14
1995	1501	-3.1	1523	-3.12	963		1000		10.9	-0.91	10.9	-1.8
1996	1709	13.86	1734	13.85	721	-25.13	749	-25.1	10.1	-7.34	10.2	-6.42
1997	2056	20.3	2086	20.3	1156	60.33	1200	60.21	11.8	16.83	11.9	16.67
1998	2174	5.74	2206	5.75	357	-69.12	370	-69.17	. .		. .	
1999	2295	5.57	2329	5.58	4558	1176.75	4732	1178.92	7.7		7.8	
2000	2663	16.03	2702	16.02	2111	-53.69	2192	-53.68	9.1	18.18	9.1	16.67
2001	2914	9.43	2958	9.47	1272	-39.74	1321	-39.74	9.4	3.3	9.5	4.4
2002	2978	2.2	3022	2.16	1304	2.52	1354	2.5	9.6	2.13	9.7	2.11
2003	2914	-2.15	2957	-2.15	1722	32.06	1788	32.05	10.3	7.29	10.3	6.19
2004	3314	13.73	3364	13.76	1639	-4.82	1702	-4.81	11	6.8	11.1	7.77
2005	3470	4.71	3521	4.67	2322	41.67	2411	41.66	12	9.09	12.1	9.01
2006	3557	2.51	3609	2.5	2728	17.48	2832	17.46	13.2	10	13.3	9.92
2007	4173	17.32	4235	17.35	2393	-12.28	2484	-12.29	14.5	9.85	14.6	9.77
2008	4862	16.51	4934	16.51	2479	3.59	3363	35.39	18.5	27.59	18.7	28.08
2009	5281	8.62	5359	8.61	3165	27.67	3272	-2.71	16.9	-8.65	17.4	-6.95
2010	5586	5.78	5671	5.82	3774	19.24	3501	7	14.9	-11.83	15.3	-12.07

Year	Canada				Argentina				Kazakhstan			
	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)
1988	17123		19339		2923		4397		. .		. .	
1989	17037	-0.5	19242	-0.5	2702	-7.56	3580	-18.58	. .		. .	
1990	17021	-0.09	19224	-0.09	1831	-32.24	2428	-32.18	. .		. .	
1991	15719	-7.65	17753	-7.65	2142	16.99	2436	0.33	. .		. .	
1992	15546	-1.1	17557	-1.1	2021	-5.65	2306	-5.34	. .		. .	
1993	15506	-0.26	17513	-0.25	2131	5.44	2175	-5.68	506		542	
1994	15278	-1.47	17255	-1.47	2342	9.9	2471	13.61	324	-35.97	348	-35.79
1995	14403	-5.73	16267	-5.73	2296	-1.96	2422	-1.98	334	3.09	359	3.16
1996	13223	-8.19	14934	-8.19	2037	-11.28	2149	-11.27	361	8.08	387	7.8
1997	12190	-7.81	13768	-7.81	2003	-1.67	2113	-1.68	338	-6.37	362	-6.46
1998	12615	3.49	14248	3.49	2019	0.8	2130	0.8	335	-0.89	359	-0.83
1999	13155	4.28	14857	4.27	2081	3.07	2195	3.05	280	-16.42	300	-16.43
2000	12943	-1.61	14618	-1.61	1982	-4.76	2091	-4.74	294	5	315	5
2001	13280	2.6	14999	2.61	1953	-1.46	2060	-1.48	432	46.94	463	46.98
2002	13350	0.53	15078	0.53	1664	-14.8	1756	-14.76	473	9.49	507	9.5
2003	13595	1.84	15354	1.83	1714	3	1808	2.96	560	18.39	600	18.34
2004	14110	3.79	15935	3.78	1764	2.92	1861	2.93	640	14.29	686	14.33
2005	14730	4.39	16636	4.4	1853	5.05	1955	5.05	806	25.94	865	26.09
2006	15415	4.65	17410	4.65	1910	3.08	2015	3.07	944	17.12	1012	16.99
2007	16806	9.02	18980	9.02	2211	15.76	2333	15.78	1420	50.42	1523	50.49
2008	18111	7.77	20454	7.77	2512	13.61	2650	13.59	1349	-5	1446	-5.06
2009	19518	7.77	21389	4.57	2982	18.71	3146	18.72	1272	-5.71	1364	-5.67
2010	20164	3.31	23109	8.04	3179	6.61	3476	10.49	1227	-3.54	1502	10.12

Year	Brunei				Bangladesh				Australia			
	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)
1988	326		349		432		456		10936		13228	
1989	325	-0.31	348	-0.29	472	9.26	499	9.43	10844	-0.84	13117	-0.84
1990	368	13.23	394	13.22	470	-0.42	496	-0.6	10897	0.49	13181	0.49
1991	366	-0.54	392	-0.51	478	1.7	505	1.81	11083	1.71	13406	1.71
1992	350	-4.37	374	-4.59	551	15.27	581	15.05	11406	2.91	13797	2.92
1993	309	-11.71	331	-11.5	598	8.53	631	8.61	11839	3.8	14320	3.79
1994	319	3.24	342	3.32	670	12.04	708	12.2	11971	1.11	14481	1.12
1995	305	-4.39	327	-4.39	690	2.99	729	2.97	11596	-3.13	14026	-3.14
1996	342	12.13	366	11.93	721	4.49	761	4.39	11454	-1.22	13855	-1.22
1997	398	16.37	426	16.39	767	6.38	811	6.57	11657	1.77	14100	1.77
1998	359	-9.8	384	-9.86	778	1.43	823	1.48	12228	4.9	14791	4.9
1999	321	-10.58	343	-10.68	806	3.6	852	3.52	12829	4.91	15518	4.92
2000	304	-5.3	325	-5.25	842	4.47	888	4.23	12791	-0.3	15473	-0.29
2001	280	-7.89	299	-8	841	-0.12	888	0	13301	3.99	16089	3.98
2002	297	6.07	318	6.35	816	-2.97	861	-3.04	13870	4.28	16777	4.28
2003	310	4.38	332	4.4	818	0.25	864	0.35	14123	1.82	17083	1.82
2004	245	-20.97	262	-21.08	822	0.49	881	1.97	14705	4.12	17788	4.13
2005	297	21.22	318	21.37	833	1.34	893	1.36	15222	3.52	18413	3.51
2006	334	12.46	357	12.26	897	7.68	961	7.61	16038	5.36	19400	5.36
2007	345	3.29	370	3.64	944	5.24	1011	5.2	17023	6.14	20591	6.14
2008	336	-2.61	381	2.97	932	-1.27	999	-1.19	17643	3.64	21341	3.64
2009	331	-1.49	374	-1.84	1024	9.87	1166	16.72	18963	7.48	22938	7.48
2010	327	-1.21	391	4.55	1137	11.04	1298	11.32	19799	4.41	23221	1.23

Year	Albania				Bahrain			
	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)	Milex 2010 version	Change (%)	Milex 2012 version	Change (%)
1988	. .		. .		238		243	
1989	. .		. .		248	4.2	253	4.12
1990	265		251		271	9.27	276	9.09
1991	. .		. .		294	8.49	300	8.7
1992	151		143		313	6.46	319	6.33
1993	132	-12.58	125	-12.59	304	-2.88	310	-2.82
1994	126	-4.55	119	-4.8	308	1.32	314	1.29
1995	118	-6.35	111	-6.72	319	3.57	325	3.5
1996	106	-10.17	100	-9.91	339	6.27	346	6.46
1997	73.8	-30.38	69.8	-30.2	333	-1.77	339	-2.02
1998	69.7	-5.56	66	-5.44	341	2.4	347	2.36
1999	80.8	15.93	76.5	15.91	381	11.73	389	12.1
2000	89.3	10.52	84.6	10.59	378	-0.79	386	-0.77
2001	102	14.22	96.1	13.59	398	5.29	406	5.18
2002	101	-0.98	96	-0.1	475	19.35	485	19.46
2003	114	12.87	108	12.5	546	14.95	557	14.85
2004	124	8.77	118	9.26	550	0.73	561	0.72
2005	129	4.03	122	3.39	544	-1.09	555	-1.07
2006	158	22.48	150	22.95	592	8.82	604	8.83
2007	196	24.05	186	24	627	5.91	639	5.79
2008	231	17.86	219	17.74	677	7.97	691	8.14
2009	249	7.79	235	7.31	762	12.56	777	12.45
2010	201	-19.28	190	-19.15	731	-4.07	776	-0.13

Table 3-A2 Ratio of SIPRI to COW data in selected years

Year	Obs	Mean	Std. Dev.	Min.	Max.
1988	89	1.32	1.19	0	7.69
1989	95	1.19	0.65	0	4.70
1990	98	1.29	0.89	0	6.92
1991	99	1.18	0.60	0	3.28
1992	93	1.14	0.64	0	3.57

Table 3-A3 Comparison of military expenditure in Libya in LCU, constant 1995 US$, constant 2010 US$ and official SIPRI Yearbook figure

Year	current LCU m.	constant (1995) US$ m.	constant (2010) US$ m.	SIPRI YB constant (2010) US$ m.
1996				
1997	577	1280.994	474.866	475
1998	675	1444.965	535.6504	536
1999	535	1115.718	413.5979	414
2000	556	1194.142	442.67	443
2001	496	1168.247	433.0704	433
2002	575		0	557
2003	700	1868.766	692.7537	693
2004	894	2440.308	904.6252	905
2005	904	2403.897	891.1274	892
2006	807.000	2115.091	784.067	785
2007	807.000	1990.656	737.9385	738
2008	1346.000	3008.522	1115.263	1116

Table 3-A4 Comparison of transitions in PRC and Polity IV dataset

PRC		After Transition			
		0	1	2	Total
Before Transition	0	1,973	44	35	2,052
		96.15%	2.14%	1.71%	100%
	1	29	346	9	384
		7.55%	90.1%	2.34%	100%
	2	24	5	1,309	1,338
		1.79%	0.37%	97.83%	100%
	Total	2,026	395	1,353	3,774
		53.68%	10.47%	35.85%	100%
Polity IV		After Transition			
		0	1	2	Total
Before Transition	0	1,546	74	9	1,629
		94.9%	4.54%	0.55%	100%
	1	43	740	42	825
		5.21%	89.7%	5.09%	100%
	2	17	21	1,486	1,524
		1.12%	1.38%	97.51%	100%
	Total	1,606	835	1,537	3,978
		40.37%	20.99%	38.64%	100%

Note: 0=autocracy, 1=semi-democracy, 2=democracy

3-A5 Comparison of Ezrow and Frantz's and Polity IV's categorisation of dictatorships

Country	Years	Ezrow and Frantz's categorisation	Polity IV Score
Argentina	1983	Military	8
Botswana	1987-96	Single-party	7
Botswana	1987-2000	Single-party	8
Brazil	1985	Military	7
Bulgaria	1990	Single-party	8
Dominican Republic	1962	Personalist	8
Ecuador	1979	Military	9
Hungary	1990	Single-party	10
Lesotho	1966-69	Single-party	9
Madagascar	1992-93	Personalist	9
Malaysia	1960-68	Single-party	10
Mexico	2000	Single-party	8
Nigeria	1979	Military	7
	1983	Military	7
Pakistan	1973-76	Personalist	8
Peru	1980	Military	7
Senegal	2000	Single-party	8
South Africa	1993-94	Single-party	8
Spain	1978-79	Personalist	9
Turkey	1960	Military	7
Turkey	1961	Military	9
Turkey	1983	Military	7

3.5.2 Conversion of Current LCU Military Expenditure into Constant USD

In this section, I discuss issues regarding the conversion of military expenditure figures from current local currency units (LCU) into constant US dollars (USD). There are two possible methods: the first, used by SIPRI, involves converting current LCU into constant LCU into USD; the alternative procedure involves converting current LCU into current USD and then into constant USD. For any country, I define

M_t	military expenditure in current LCU in year t;
P_t and P_b	local price index in year t and in the base year, b;
E_t and E_b	exchange rate against the USD;
$P^*{}_t$ and $P^*{}_b$	US CPI in year t and in the base year, b.

According to the procedure SIPRI follows, denoted ${M_t}^S$, M_t is converted into constant LCU using the local price index in year t, P_t:

$$\overline{M}_t = \frac{M_t}{P_t} \qquad (3.1)$$

and then converted into USD using the exchange rate in the base year, E_b:

$${M_t}^S = \frac{M_t}{P_t * E_b} \qquad (3.2)$$

According to the alternative procedure, denoted ${M_t}^A$, M_t is converted into current USD using the exchange rate in year t, E_t:

$${M_t}^{USD} = \frac{M_t}{E_t} \qquad (3.3)$$

and then converted into constant USD using the US CPI in year t, $P^*{}_t$:

$${M_t}^A = \frac{M_t}{E_t * P^*{}_t} \qquad (3.4)$$

The two methods are equivalent, i.e. purchasing power parity holds, when

$$\frac{M_t}{P_t * E_b} = \frac{M_t}{E_t * P^*_t} \qquad (3.5)$$

And

$$\frac{P_t * E_b}{P^*_t * E_t} = 1 \qquad (3.6)$$

The first method, i.e. the one SIPRI uses, ensures consistency over time in country X. However, cross-country comparisons are distorted by the fact that exchange rates may not have changed in the same way as relative prices. The alternative method ensures consistent cross-country comparisons in year t. Nonetheless, according to SIPRI "constant price conversions still allow a rough cross-country comparison, except where exchange rates have seriously diverged from relative price movements between the year of interest and the base year" (SIPRI 2013a).

4 The Military and Democratisation

4.1 Introduction

The events sweeping the Arab world since late 2010 have once again highlighted the importance of understanding the process of democratisation. It is not only important to understand the forces that bring about the *transition* to democracy; understanding the factors that enable the *consolidation* of democracies is paramount. According to Reich (2002), the 20th century witnessed 58 transitions towards more authoritarian forms of government (40% of all transitions). One important factor that remains largely under-investigated in the economic literature on democratisation is the military. The military is a force that has the power to severely undermine democracy. This was most recently illustrated in Egypt, discussed in chapter 1: After president Mubarak was ousted, the Egyptian military formed an interim government, promising to hand power to a civilian government in due course. However, keen to protect its privileged position in society, it proved reluctant to hand over power to civilians and repeatedly postponed elections. In July 2013, only a year after it finally did, the military removed President Morsi from office, suspended the constitution and violently quelled protests. In February 2014, the government appointed to rule after the removal of Morsi resigned to clear the way for Field Marshal Abdel Fattah al-Sisi's to become president, which he did in May 2014. The future of democracy in Egypt remains tenuous. Latin America yields numerous examples of countries that fluctuated between democracy and military regimes. Overall, according to Huntington (1995), there have been “somewhere between 30 and 40 coup attempts against newly democratic governments”. A better understanding of the role of

the military in transitions to democracy will yield important lessons for new democracies, decreasing the likelihood that they revert back to authoritarian rule.

This chapter examines the role militaries play in new democracies. It hypothesizes that countries in which the military was politically powerful before democratic transition occurred, are less likely to consolidate democracy. Political power of the military is proxied through military expenditure, which, it is assumed, gives some indication as to what extent the government prioritises the military. This is far from being a perfect proxy, but is the closest indicator for which comprehensive data is available. As a robustness check, I also use the International Country Risk Guide's (ICRG) measure of the military's involvement in politics and compare results. This chapter proceeds as follows: section 2 introduces the theoretical framework underpinning this analysis; section 3 reviews the relevant literature; section 4 discusses the data; section 5 outlines the methodology and discusses the results; an alternative measure of military political power is considered in a subsection of section 5; and the final section offers a conclusion.

4.2 Theory

This chapter hypothesises that countries, in which the military was powerful before democratic transition occurs, are less likely to consolidate democracy. This hypothesis is based on the paper by Acemoglu, et al. (2010, p. 2), entitled "A Theory of Military Dictatorships", in which they arrive at the same conclusion that "societies in which nondemocratic regimes in the past have chosen large militaries may have difficulty consolidating democracy and may instead end up with military dictatorships". Their reasoning is as follows:

> "If the elite create a powerful military to prevent democratization, then the military also plays an important role in democratic politics until it is reformed, and such reform is not instantaneous. In particular, we show that faced with a powerful military, a newly-emerging democratic regime will either need to make costly concessions or face a high probability of a coup. This coup threat disappears once the military is reformed. Interestingly however, it is the anticipation that the military will be reformed as soon as the opportunity arises that makes it difficult to control the military during the early phases of a democratic regime - because this creates a commitment problem, making it impossible for democratic governments

> to make credible promises to compensate soldiers for not taking actions against democracy" (Acemoglu et al. 2010, p. 2).

They set up a multi-period model, in which society starts as a so-called oligarchy (a non-military dictatorship) with no military; the elite can decide whether to create a military (for repression) or not. If the elite do choose to form a military, but for some reason transition to democracy occurs, the newly-emerging democratic regime will want to reform the military. However, the military knows that once it is reformed, it will no longer have any say in politics. In order to prevent this, the military may choose to attempt a coup and take over the government. This moral hazard problem leads to states with powerful militaries reverting back to autocracies in the form of military dictatorship.

4.3 Literature Review

Acemoglu et al. (2010) do not test their hypothesis empirically, and so far few empirical applications have been attempted by other researchers. Research on the role of the military in democratisation has largely been confined to the qualitative arena (see for example, Colletta et al. 1996; Akkoyunlu 2007).

A notable exception is Svolik's (2008) paper, which studies authoritarian reversals and democratic consolidation. Using Cheibub and Gandhi's (2005) dataset (a precursor to Cheibub et al., 2010, discussed in chapter 3), which codes dictatorships as military, civilian and monarchy, he finds that a military past has a large negative effect on democracy's susceptibility to authoritarian reversals. Svolik's paper yields extremely interesting insights and is especially interesting because he used innovative statistical methods (e.g. survival analysis). However, I argue that by only considering the effect of outright military regimes, he underestimates the influence the military might have in non-military regimes. In this chapter, I try to take a broader approach by attempting to quantify political power of the military *in general*. My results might be viewed as complementing Svolik's findings.

In addition, relevant studies include Collier and Hoeffler (2006), who investigate the related question of military expenditure in post-conflict societies. They theorise that in post-conflict societies, power asymmetries between the government and rebel organisations create a time-inconsistency problem which incentivises the government to renege on a peace agreement.

Lowering military spending acts as a signal from the government that it intends to adhere to the terms of the peace agreement. Using global data for the period 1960-1999, they find empirical evidence that higher military spending post-conflict increases the risk of renewed conflict. Furthermore, Leon (2010) investigates the effect of military spending on the risk of coup d'états. Like Acemoglu et al. (2010), he argues that governments can use military spending to prevent their militaries from overthrowing them. Using a panel of 153 countries for the period 1963-1999, he finds that military spending has a negative effect on the likelihood of coups. While these papers study related issues, they do not deal directly with democratic reversal. They are, however, particularly relevant for this chapter because they employ military expenditure and an explanatory variable.

From a methodological point of view, the analysis in this chapter draws on the modernisation hypothesis literature. There are a number of empirical issues encountered in the present analysis that crop up in modernisation literature, which I shall discuss later. The so-called modernisation hypothesis literature dates back to Lipset (1959), who argued that democracy was the result of rising prosperity. Barro (1999) was the first to systematically analyse this hypothesis. In a panel study of over 100 countries from 1960 to 1995, he finds that GDP per capita, primary schooling, a smaller gap between male and female primary attainment, and the middle-class share of income are positively associated with an increase in democracy.

Przeworski et al (2000) challenge the modernisation hypothesis. They argue that while higher income per capita entrenches already democratic countries, it does not promote transitions to democracy itself. However, Epstein et al (2006) contest their findings. They re-test the modernisation hypothesis using a three-way rather than a dichotomous measure of democracy, treating semi-democracies as a separate category. Using tobit regressions, Markov analysis and duration models on a panel of 169 countries from 1960 to 2000 they find evidence that higher income per capita not only furthers the consolidation of existing democracies, but also promotes transitions to democracy. Moreover, they highlight the importance of so-called "fragile", "unconsolidated" semi-democracies in understanding the dynamics of regime transitions.

A stronger challenge to the modernisation hypothesis comes from Acemoglu et al (2008, 2014). They propose that the correlation between income and democracy found in cross-sectional analysis stems from the fact that 500 years ago most societies were nondemocratic and had broadly similar income levels but since then have embarked on divergent

development paths, "some leading to relative prosperity and democracy and others to relative poverty and dictatorship" (Acemoglu et al., p. 812). They refer to their previous studies on European colonization strategies (Acemoglu, et al, 2001) in support of this hypothesis. In a panel of countries between 1960 and 2000, Acemoglu et al demonstrate that the link between income and democracy disappears when country fixed-effects, time-effects and instrumental variables are introduced into the regression[19].

However, Gundlach and Paldam (2012) question the findings of Acemoglu, at al. (2008). They replicate the ARJY model, but point out that it requires the inclusion of the lagged endogenous variable, country-fixed effects, and time-fixed effects to make the income effect disappear. Leaving out one of these three controls always results in a significant relationship between Polity IV and the log of GDP per capita. Moreover, most of the variation in Polity IV is explained by income, by the lag of itself, or by country fixed effects, and little is added in terms of explanatory power of the model by the inclusion of time-fixed effects. Gundlach and Paldam do a similar analysis on five further transition variables (share of agriculture, population growth, the corruption perception index from Transparency International, religiousity, and the score for the aggregate preferences for capitalism or socialism) and find similar patterns. They argue that the ARJY model "removes all systematic components from the dependent transition variable and leaves only short-run shocks in the series" (Gundlach and Paldam, 2012 , p. 168). They point out that short-run shocks in income are rarely claimed to be a crucial factor in explaining transition variables. Nevertheless, they concede that in the case of the democratic transition, it may be difficult to determine whether the long run patterns or short run shocks matter more because regime change is often triggered by a sudden event.

Triesman (2011) argues that economic development is not translated into more democracy until the incumbent leader falls from power. He distinguishes between the short run and what he defines as the medium run (10 to 20 years) effect of income on democracy. He argues that in the short run growth boosts the incumbent's popularity and finds evidence that it improves his odds of survival. However, when leadership turnover does eventually occur, countries with higher income are more likely to move towards democracy. In this way "for years, a society may evolve under the surface, growing more complex, bourgeois, literate, interconnected, media savvy, tolerant, and difficult to control, without any corresponding alteration in the political superstructure – until a crisis occurs and the latent demand for participation combines with the new potential for social organisation" (Triesman, 2011, p.10). Triesman's logic

[19] The literature refers to this paper as the ARJY model.

explains why "modernisation theory often seems at odds with current events, and why breakthroughs to more accountable government frequently come as a surprise" (ibid, p. 28).

Finally, Hoeffler et al. (2012) separate income per capita into its resource and non-resource components. Using dynamic and heterogeneous panel data estimation techniques they find that the non-resource component of income is positively linked to democracy, while the resource component is negatively linked. I will revisit link between natural resources and regime type in chapter 7.

While the pattern of causality between income and democracy remains an open question, I take the modernisation approach, using GDP per capita as an independent variable explaining democracy, rather than the institutional approach, which uses democracy as an independent variable explaining GDP per capita.

4.4 Data and Empirical Analysis

This chapter forms a first step towards dissecting empirically the complicated relationship between the military and democratisation. A major challenge is measuring the political power of the military. I approach this problem by using military burden as a proxy for the military's political power because it gives some indication as to what extent the government prioritises it. This is far from being a perfect proxy because military burden is also determined by other factors, internal and external, and in particular threats from enemies. However, it is the closest indicator for which comprehensive data is available. As an alternative, I also use the International Country Risk Guide's (ICRG) measure of the military's involvement in politics. However, data for this is much less comprehensive, covering only the period 1984 to present, thus missing out the two extremely interesting decades in terms of regime transition.

This chapter uses a panel of up to 102 countries over the period 1960-1998. Data on military spending is combined from the Correlates of War (COW) National Material Capabilities database and the Stockholm International Peace Research Institute (SIPRI) military expenditure database. Following Nordhaus, Oneal and Russet (2012), I use COW data from 1960 to 1987 and SIPRI data from 1988 to 2000[20]. I transform all data into percentages of GDP using GDP

[20] In later chapters I control for potential differences between the two data sources using a dummy, but find that this does not change the results.

figures (in constant 2000 USD) from the World Bank World Development Indicators to get a measure of military burden.

This chapter uses two measures of democracy: Marshall and Jaggers (2002) Polity IV and Reich's (2002) dataset of political regime change (PRC). As described in the previous chapter, Polity IV is a discrete ordinal variable which ranks countries on a scale from -10 to +10, with higher values indicating more democracy. PRC is a categorical measure, which groups countries into autocracies (PRC=0), semi-democracies (PRC=1) and democracies (PRC=2).

A closer look at the PRC data gives some interesting insights. Tables 4.1-3 show the overall frequency and percentage of each regime type and of transitions by country-year, as well as the frequency of transitions by country that took place between 1960 and 1998. Autocracy is the most common form of government throughout the sample period, with more than half of all observations falling in this category (table 4.1). However, democracy has been on the rise: Of the 146 transitions that took place within this period 60.3% were towards a more democratic form of government (table 4.2). Nevertheless, regime types are persistent: the probability that a regime will persist is greater than 90% for all regime types (Table 4.2). However, comparing tables 4.2 with 4.3 illustrates the fact that if countries do transition they can end up fluctuating back and forth between regime types (the number of overall transitions is higher than the number of transitions by country, indicating that some countries must have experienced multiple transitions).

Table 4-1 Summary statistics for PRC dataset, 1960-1998

PRC	Overall		Between variation		Within variation
	Frequency	Percent	Frequency	Percent	Percent
Autocratic	2075	53.55	76	74.51	71.96
Semi	408	10.53	44	43.14	25.99
Democratic	1392	35.92	70	68.63	51.26
Total	3875	100	190	186.27	53.68

Table 4-2 PRC regime transitions by country-year

		After							
		Authoritarian		Semi		Democratic		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
Before	Authoritarian	1973	96.15	44	2.15	35	1.71	2052	100
	Semi	29	7.55	346	90.1	9	2.34	384	100
	Democratic	24	1.79	5	0.37	1309	97.83	1338	100
	total	2026	53.67	395	10.47	1353	35.86	3773	100

Table 4-3 PRC regime transitions by country

Type of transition	Number of countries
Always authoritarian	15
Always democratic	21
Always semi-democratic	0
Countries experience at least one transition	66
At least one transition from democracy to autocracy	21
At least one transition from semi-democracy to autocracy	20
At least one transition from democracy to semi-democracy	5
At least one transition from autocracy to semi-democracy	34
At least one transition from semi-democracy to democracy	9
At least one transition from autocracy to democracy	30

Before proceeding with estimation, it is worthwhile doing some more basic analysis. Table 4.4 sets out the mean and standard deviation of military burden by political regime type. The average military burden is substantially lower in democracies than in authoritarian regimes. Figure 4.1 charts the annual averages of Polity IV and military burden across time. This plot shows Polity IV and military burden clearly moving in opposing directions. In particular, in the early 1980s, i.e. around the time the Cold War began to thaw, there seems to have been a shift in both variables: while average military burden had been growing up until this point, in began to decrease thereafter; at the same time Polity IV began in increase, having previously been on the decline. Figure 4.1 and table 4.4 suggest that there may be a relationship between military spending and regime type. The fact that the shift occurred in both variables around the same time is noteworthy. It is possible that this pattern is being driven by a third exogenous factor, the end of the Cold War, which caused both worldwide democracy levels to rise and worldwide military expenditure to drop. At this level of aggregation, it is not possible to establish the direction of causation, but it motivates further investigation.

Table 4-4 Summary statistics for military burden by regime type

PRC	Obs	Mean	Std Dev
Autocracy	1,763	8.202043	14.06533
Semi	389	4.631678	3.472358
Democracy	1,357	3.595313	3.33132

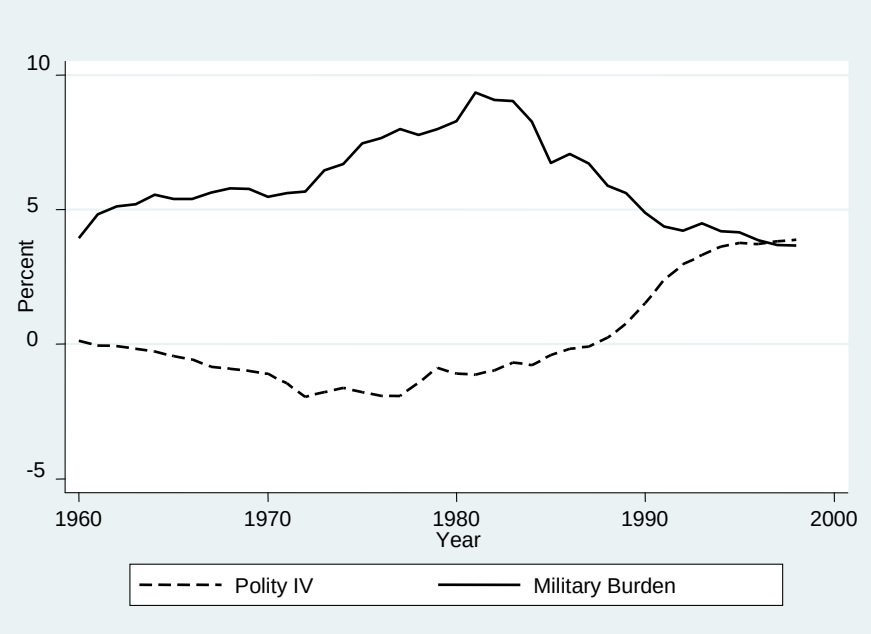

Figure 4-1 Polity IV and military spending as a percentage of GDP averaged over countries by year

A major problem in analysing the relationship between military expenditures and democracy is the potential endogeneity of democracy. That authoritarian regimes spend more on the military than democracies has been documented in the literature on military expenditures (see for example Nordhaus, Oneal and Russet, 2012; Yildrim and Sezgin, 2005; Dunne and Perlo-Freeman, 2003; Goldsmith, 2003; Hewitt, 1992). While this literature treats democracy as a determinant of military expenditure, it does not establish causality nor does it investigate potential endogeneity[21]. In this chapter, military expenditure is treated as predetermined. Estimation techniques are modelled on the modernisation literature which encounters a similar problem – growth may in fact be the result of good institutions. Chapter 5 delves further into the matter of reverse causality.

Estimation techniques must be adapted to how democracy is measured. Using Polity IV as an dependent variable, I estimated a fixed effects model, an ECM and a VAR. Using PRC as the

[21] The exception is Kimenyi and Mbaku's (1995), but this study is extremely limited, in that it studies only cross-sectional of countries in the year 1980.

dependent variable, I estimate an ordered probit and a fixed effects model. As mentioned above, GDP per capita[22] is included as a control variable in all regressions. Military burden and GDP per capita are logged to scale down the variance and reduce the effect of outliers. Table 4.A1 in the appendix outlines the summary statistics for the relevant variables.

4.5 Methodology and Results

4.5.1 Polity IV

I begin with a simple model of the democratic transition. Following Gundlach and Paldam (2012), Polity IV (labelled PIV_{it} in the equations below) is regressed on the lagged log of military burden and the lagged log of GDP per capita. Military burden and GDP are logged to reduce the effect of outliers, but also to enable a more straightforward interpretation of results. I use lags of the explanatory variables to partially deal with the problem of endogeneity. As mentioned above, this issue shall be explored in more depth in the next chapter. I first estimate the model using pooled OLS (equation 1), then enhance the model with country fixed effects (equation 2) and time fixed effects (equation 3) to control for time-invariant country specific characteristic and time trends, respectively.

$$PIV_{it} = \beta_1 \log Burden_{it-1} + \beta_2 GDPpc_{it-1} + \varepsilon_{it} \quad (4.1)$$

$$PIV_{it} = \alpha_i + \beta_1 \log Burden_{it-1} + \beta_2 GDPpc_{it-1} + \varepsilon_{it} \quad (4.2)$$

$$PIV_{it} = \alpha_i + \alpha_t + \beta_1 \log Burden_{it-1} + \beta_2 GDPpc_{it-1} + \varepsilon_{it} \quad (4.3)$$

Table 4.5 summarizes these estimation results. Pooled OLS yields significant results for log military burden and log GDP. A 10% increase in the last period's military burden is associated with a 0.087[23] unit decrease in Polity IV. The effect is quite small: the coefficient on log military burden implies that a reduction in military burden from, for example, 10% to 5% of GDP is associated with a 0.6 unit increase in Polity IV. A 10% increase in the lagged log of GDP per capita is associated with a 0.2867 unit increase in Polity IV. The latter is in keeping with the

[22] The data on GDP per capita is from the World Bank World Development Indicators and is in constant (2000) USD.
[23] In a linear-log model, a 1% increase in the explanatory variable is associated with a β/100 unit change in the explained variable.

modernisation hypothesis. The coefficient on the lag of GDP per capita is comparable to Gundlach and Paldam's findings (β2=3.33).

Table 4-5 Estimation results: static model using military burden as a proxy for military political power

Dependent variable is Polity IV	(1)	(2)	(3)
	Pooled OLS	One-way Fixed Effects	Two-way Fixed Effects
Log military burdent-1	-.8700267**	-.774753**	-.3638741
	(.3792644)	(.3602042)	(.304044)
Log GDP per capitat-1	2.867411***	1.454207	-1.13584
	(.2419076)	(.977842)	(.9096871)
Constant	-19.45061***	-9.145012	7.880659
	(1.918854)	(7.126586)	(6.504634)
Fixed effects	no	yes	yes
Year dummies	no	no	yes
Obs	3387	3387	3387
Groups	102	102	102
R^2 within		0.0218	0.2167
R^2 between		0.5166	0.3641
R^2 overall	0.3834	0.3760	0.0456

robust standard errors in (),*** p<0.01, ** p<0.05, * p<0.1

Adding country effects renders the log of GDP per capita insignificant, while the log of military burden continues to have a significant negative effect on Polity IV. A 10% increase in last period's military burden is associated with a 0.077 unit decease in Polity IV. Gundlach and Paldam (2012) find that it requires the inclusion of not only country fixed effects, but also the inclusion of the lagged endogenous variable and time-fixed effects to make the income effect disappear. Clearly the inclusion of log military burden in the analysis makes a difference.

Finally, adding time fixed effects renders all parameters insignificant. It is perhaps noteworthy that GDP per capita switches signs in the two-way fixed effects model. A dynamic model may shed some light on this result.

I test for dynamics using an ARDL (1,1) of the form

$$\Delta PIV_{it} = \alpha_i + \alpha_t + \beta_1 \Delta \log Burden + \beta_2 \Delta \log GDPpc_{it} + \gamma_1 PIV_{it-1} + \gamma_2 \log Burden + \gamma_3 GDPpc_{it-1} + u_{it} \quad (4.4)$$

The adjustment parameter, λ, and the long-run equilibrium values, θ1 and θ2, can be recovered from the following calculations: λ=-γ1; θ1=γ2/-γ1; θ2=γ3/-γ1.

Table 4-6 Estimation results: ECM

Dependent variable is Δ.Polity IV	(1)	(2)	(3)
	Pooled OLS	One-way Fixed Effects	Two-way Fixed Effects
Δ.log military burden	-0.3358024***	-0.3396909***	-0.2650571**
	(0.1099032)	(0.1229838)	(0.1115515)
Δ.log GDP per capita	-1.830771***	-1.913841**	-1.550788*
	(0.7358606)	(0.8521507)	(0.8407329)
Polity IVt-1	-.0509492***	-0.1031674***	-0.1329156***
	(0.0065885)	(0.0124677)	(0.0137859)
Log military burdent-1	-0.0396526	-0.1136064	-0.1195782
	(0.035852)	(0.086592)	(0.0775714)
Log GDP per capitat-1	0.1436725***	0.3709243**	-0.2596793
	(0.0316583)	(0.1713859)	(0.1748132)
Constant	-0.8423177***	-2.398595*	1.705422
	(0.2437426)	(1.263288)	(1.393555)
Fixed effects	no	yes	yes
Year dummies	no	no	yes
Obs	3369	3369	3369
Groups	n/a	101	101
R^2 within		0.0538	0.0952
R^2 between		0	0.0722
R^2 overall	0.0302	0.0273	0.0246

robust standard errors in (), *** p<0.01, ** p<0.05, * p<0.1

Table 4.6 summarises these results. The short run effects are captured by the first differenced variables. In the short run, both the log of military burden and the log of GDP per capita have significant negative effects on Polity IV in all models. In the one-way fixed effects model, a 10% increase in the change in military burden is associated with a 0.034 unit decrease in Polity IV. The short run effect is smaller than the effect in the static model. This is not surprising, as both democracy and military spending are variables that experience a considerable amount of inertia.

Interestingly, the effect of GDP per capita is negative in the short run throughout all specifications (whereas without the inclusion of dynamics it switches signs – see above). This

result suggests that in the short-run, growth might help sustain a dictator – a finding that is in keeping with Triesman's (2011) paper.

The speed of adjustment and long-run coefficients are calculated in table 4.7. In the one-way fixed effects model, the long-run effect of military expenditure on democracy is -1.1008 (θ1=-0.1136/0.1032). As might be expected, military expenditure has a substantially bigger effect on democracy when observed over a longer horizon. The long run effect of GDP per capita on democracy is 3.594 (θ2=0.3709/0.1032). It would appear that the modernisation hypothesis only holds in the long-run, whereas the immediate effect of an increase in GDP per capita, as mentioned above, is to decrease democracy. Again, this result is in keeping with Triesman's (2011) argument that in the short run growth boosts the incumbent's popularity. Finally, the speed of adjustment tells us that democracy converges to its equilibrium level at a rate of 10.32% per year.

Table 4-7 Speed of Adjustment and long-run coefficients of the ECM

	Pooled OLS	One-way Fixed Effects	Two-way Fixed Effects
Speed of Adjustment (λ)	0.0509	0.1032	0.1329
Long-run effect of burden (θ1)	-0.778	-1.1007	-0.8999
Long-run effect of GDP pc (θ2)	2.8232	3.594	-1.9541

4.5.2 Political Regime Change

Following Epstein et al (2006), I employ what they refer to as a Markov setup[24] to estimate the probability of moving from one regime type to another in a single period, given certain characteristics, i.e. military burden and GDP per capita, present in that period.

$$F[\Pr(PRC_{it} = b | PRC_{it-1} = a)] = \theta_{ab} + \beta_a X_{it} \quad (4.5)$$

where a and b are possible regime types and F(.) is a function from the [0,1] interval, such as the logit or probit.

[24] Note that this is different from a Markov switching model. A Markov switching model means that the present can be explained entirely by the previous period. Epstein et al (2006) do not necessarily assume this.

Using an ordered probit, I estimate the following equation:

$$PRC_{it} = \beta_1 PRC^*_{0\,t-1} + \beta_2 PRC^*_{1\,t-1} + logburden_{t-1} + logburden_{t-1} * PRC^*_{0\,t-1} + logburden_{t-1} * PRC^*_{1\,t-1} + logGDPpc_{t-1} + logGDPpc_{t-1} * PRC^*_{0\,t-1} + logGDP_{t-1} * PRC^*_{1\,t-1} + u_{it} \quad (4.6)$$

where PRC=0,1,2 for autocracy, partial democracy and democracy, respectively. PRC0* and PRC1* are defined as set out in table 4.8: PRC0* equals 1 when a regime is an autocracy and 0 otherwise, thus capturing all fully autocratic regimes. PRC1* equals 1 when a country is either an autocracy or a semi-democracy, thus capturing all non-democracies. Defining PRC0* and PRC1* and interacting them with the explanatory variables, makes it possible to test whether the effect of the explanatory variables on democracy depends on whether the country was initially an autocracy, semi-democracy or democracy. If, for example, the interaction between PRC_0* and military burden is significant, this means that military burden has a different effect on the level of democracy if the regime is autocratic in the previous period, as opposed to partially or fully democratic.

Table 4-8 Definition of dummy variables for ordered probit estimation

	Autocracy	Semi-democracy	Democracy
PRC0*	1	0	0
PRC1*	1	1	0

I initially test all interaction terms, and then test down to a more specific model. Table 4.9 summarises the results. In an ordered probit, care is required when interpreting the coefficients. According to Greene (2012, p. 830), "without a fair amount of extra calculation, it is quite unclear how the coefficients in the ordered probit model should be interpreted". However, it is possible to comment on the sign of the coefficients. The coefficient on PRC_0*_{t-1} is negative. If a country switched from semi-democratic or democratic to autocratic at time t-1, the effect on PRC at time t is to decrease it. This implies that if a country was autocratic at time t-1, it is likely to be autocratic at time t. The coefficient on PRC_1*_{t-1}, on the other hand, is positive. A possible interpretation is that semi-democracies are subject to less inertia. A semi-democracy at time t-1 has a greater chance being democratic at time t that a full autocracy.

The effect of military burden on regime type in autocracies vs. semi-democracies can be calculated by adding the coefficients on log military burden$_{t-1}$ and the appropriate interaction

Table 4-9 Estimation results: ordered probit

Dependent variable is PRC	(1)	(2)
PRC0*t-1	-2.271157***	-2.2356***
	(0.4596298)	(0.0812)
PRC1*t-1	1.178199**	1.1495**
	(0.5685541)	(0.5099)
Log military burdent-1	0.0875135	0.0875
	(0.0816755)	(0.0817)
Log military burdent-1 *PRC0*t-1	-0.0687499	
	(0.0634705)	
Log military burdent-1 *PRC1*t-1	-0.1092603	-0.152*
	(0.0957813)	(0.0874)
Log GDP per capitat-1	0.5317526***	0.5318***
	(0.0653119)	(0.0653)
Log GDP per capita t-1*PRC0*t-1	0.0175953	
	(0.0655847)	
Log GDP per capitat-1*PRC1*t-1	-0.4945226***	-0.4831***
	(0.0814674)	(0.0729)
Cut1	0.7629806	0.7625
	(0.4530765)	(0.4531)
Cut2	2.20789	2.2083
	(0.4524896)	(0.4525)
Obs	3376	3376

cluster-robust standard errors in (),*** p<0.01, ** p<0.05, * p<0.1

terms (see table 4.10 for calculations). For autocracies the effect of military burden on regime type is negative. In autocracies, an increase in military burden decreases the probability of democracy. The effect for semi-democracies is also negative. If these coefficients were significant, one might be able to interpret this as evidence the military political power entrenches autocracy. However, they are not. Nevertheless, in the parsimonious model, the interaction between log military burden$_{t-1}$ and PRC1*$_{t-1}$ is significant. This implies that military burden does have a different effect on the level of democracy if the regime was autocratic or semi-democratic in the previous year, as opposed to fully democratic.

The effect of GDP per capita can be calculated in a similar way: In autocracies, the effect of GDP per capita on regime type in positive (0.53+0.02-0.49=0.06). In semi-democracies the effect is also positive (0.53-0.49=0.04). These results might suggest that and increase in GDP

has a democratising effect. Interestingly the effect of GDP per capita on regime type appears to non-monotonic and U-shaped: As a country moves from autocracy to semi-democracy, regime type is decreasing with GDP per capita (0.06>0.04), but as it moves to semi-democracy

Table 4-10 The effect of military burden on regime type in autocracies, semi-democracies and democracies

Variable	**Coefficient**
Log military burden(t-1)	0.0875
Log military burden(t-1)*PRCO*(t-1)	-0.0687
Log military burden(t-1)*PRC1*(t-1)	-0.1092
Regime Type	**Calculation of Effect**
Autocracy	0.09-0.07-0.11=-0.09
Semi-democracy	0.09-0.11=-0.02

to democracy, regime type is increasing in GDP per capita (0.04<0.53). This result suggests that an increase in GDP per capita encourages the formation/consolidation of both autocracies and democracies. Finally, the fact that the interaction between log GDP per capita$_{t-1}$ and PRC$_1$*$_{t-1}$ is significant implies that GDP per capita has a different effect on the level of democracy if the regime was autocratic or semi-democratic in the previous year, as opposed to fully democratic.

4.5.3 International Country Risk Guide

I have acknowledged that military burden is a problematic proxy for military power. Unfortunately, there are few plausible alternatives. Options that were considered for this thesis include number of soldiers as a percentage of total population and military expenditure per soldier. Soldiers as a percentage of total population tells us what proportion of the country is employed by the military and may be indicative of the level of support the military might enjoy, as well as the degree of militarisation in a country. The World Bank World Development Indicators supply data on armed forces personnel as a percentage of the total labour force; however coverage is extremely limited, with data generally only available from 1990 onwards and entirely missing for numerous countries.

Military expenditure per soldier might capture to some degree the idea of the so-called “efficiency wage”. If spending per soldier is above a certain level, soldiers are likely to prefer the status quo over democratisation. Data on military spending per soldier is not readily available, but might be back out of available date on military spending, armed forces personnel

as a percentage of the total labour force and total population. However, as mention about, data on armed forces personnel as a percentage of the total labour force is limited. In addition, backing out data on expenditure per soldier in this way obscures important differences across countries regarding capital-labour substitution: simply dividing military spending by number of soldiers does not give an accurate account of whether soldiers are being paid an efficiency wage, as a large proportion of military expenditure may go to arms purchases, which soldiers may care less about.

A more plausible alternative is the International Country Risk Guide's Political Risk Rating, which includes a measure of military involvement in politics (henceforth referred to as ICRG), which is available from 1984 onwards. Initially, I examine the relationship between ICRG and military burden, by regressing

$$ICRG_{it} = \alpha_i + \alpha_t + \beta \log Burden_{it} + u_{it} \qquad (4.7)$$

Note that a *lower* ICRG score indicates *more* military involvement in politics, whereas a higher military burden suggests more political power. One would therefore expect the coefficient on log burden to have a negative sign if these two proxies are closely related. Table 4.11 outlines these results. The coefficient on log burden does in fact have a negative sign, but is only significant in the one-way fixed effects model. This result suggests that while military burden is, as was suspected, a weak proxy for military political power, its effect runs in the expected direction.

Table 4-11 Estimation results: relationship between ICRG and military burden

Dependent variable is ICRG	(1)	(2)
	One-way Fixed Effects	Two-way Fixed Effects
Log Burden	-0.168**	-0.083
	(0.085)	(0.09)
Constant	3.839***	3.780***
	(0.101)	(0.109)
Fixed effects	Yes	Yes
Time effects	No	Yes
Obs	1424	1424
Groups	93	93
R^2 within	0.0111	0.048
R^2 between	0.0001	0.0014
R^2 overall	0.0002	0.0047
AIC	3269.181	3244.873

cluster-robust standard errors in (); *** p<0.01, ** p<0.05, * p<0.1

Table 4-12 Estimation results: static model using ICRG as proxy for military political power

Dependent variable is Polity IV	(1)	(2)	(3)
	Pooled OLS	One-way Fixed Effects	Two-way Fixed Effects
ICRGt-1	0.749**	0.872***	0.422
	(0.310)	(0.319)	(0.274)
Log GDP pct-1	2.052***	-1.552	-3.970**
	(0.367)	(1.135)	(1.586)
Constant	-15.123***	12.009	33.784***
	(2.106)	(8.799)	(12.259)
Fixed effects	No	Yes	Yes
Time effects	No	No	Yes
Obs	1355	1355	1355
Groups	N/A	93	93
R^2 within	N/A	0.0316	0.2491
R^2 between	N/A	0.2444	0.4007
R^2 overall	0.3511	0.1682	0.2426
AIC	8551.274	6931.127	6614.453

cluster-robust standard errors in (); *** p<0.01, ** p<0.05, * p<0.1

Next I re-run models (1) - (3) on the period 1984-2000, replacing military burden with ICRG. Again note that a *lower* ICRG score indicates *more* military involvement in politics, so based on my hypothesis one would expect a positive relationship between ICRG and democracy. Table 4.12 summarises these results. The results appear to confirm out hypothesis: In the one-way

fixed model, the effect of ICRG is positive and significant. A one unit increase in ICRG is associated with a 0.872 unit increase in Polity IV.

Finally, I re-run models (1) – (3), using both military burden and ICRG as explanatory variables. Table 4.13 summarizes the results. Both measures take on the appropriate sign and are significant in the one-way fixed effects model. Interestingly, military burden is also significant in the two-way fixed effects model, while in the previous estimations, using only military burden and not ICRG, it was not. Moreover, the size of the coefficients for military burden more than double in size. A 10% increase in military burden is now associated with a 0.1517 decrease in Polity IV (compared with a 0.087 decrease – see table 4.13). This may be explained by the fact that military burden measures more than one dimension of military power: it not only measures political power, but also military capability.

Table 4-13 Estimation results: static model using both military burden and ICRG as proxy for military political power

Dependent variable is PRC	(1)	(2)	(3)
	Pooled OLS	One-way Fixed Effects	Two-way Fixed Effects
Log Burdent-1	-0.969*	-1.517***	-0.774*
	(0.526)	(0.518)	(0.401)
ICRGt-1	0.582*	0.665**	0.396
	(0.315)	(0.323)	(0.278)
Log GDP pct-1	2.127***	-1.968	-4.000***
	(0.373)	(1.318)	(1.338)
Constant	-14.326***	17.267*	34.863***
	(2.380)	(10.377)	(10.492)
Fixed effects	No	Yes	Yes
Time effects	No	No	Yes
Obs	1325	1325	1325
Groups	N/A	93	93
R^2 within		0.0838	0.2631
R^2 between		0.1697	0.372
R^2 overall	0.3748	0.1097	0.2247
AIC	8318.191	6728.867	6468.321

cluster-robust standard errors in (); *** p<0.01, ** p<0.05, * p<0.1

4.6 Conclusion

This chapter investigated the role of the military in democratisation. It tested empirically the hypothesis, first put forward by Acemoglu et al (2010) that countries in which the military was politically powerful before democratic transition occurred are less likely to consolidate democracy. This analysis represents one of the first empirical applications of Acemoglu et al.'s (2008) theory of military dictatorships.

One of the reasons why this topic remains largely under-investigated in the economic literature may be the lack of data for measuring military political power. In this chapter, I proxied military political power with military burden. In addition, I used the International Country Risk Guide's measure of military involvement in politics, which, on the one hand, is a closer proxy for military political power, but, on the other hand, is a shorter dataset. I found evidence that a politically powerful military is detrimental for democracy: both a higher military burden and a higher level of military political involvement (as indicated by a lower ICRG score) are negatively associated with democracy.

The inclusion of time effects often reduces the significance of the explanatory variables. However, using two measures of military political power and two measures of democracy, I get results consistent with the idea that increased military political power tends to inhibit democratisation.

It must be noted, however, that these results must be interpreted with caution, as they are subject to a number of empirical problems. Firstly, there may be a problem of reverse causality between democracy and military burden: the literature on the determinants of military burden suggests that democracy is a determinant of military spending. This implies a potential endogeneity problem, resulting in biased coefficients. In this chapter, military burden was treated as pre-determined. I link my investigation to the modernisation literature, which encounters a similar endogeneity problem. In the next chapter, I shall investigate this issue of reverse causality in more depth. Finally, my estimations are limited to standard panel data techniques. An interesting expansion of this analysis may be the estimation of a duration model.

4.7 Appendix to Chapter 4

4.7.1 Figures and Tables

Table 4-A1 Summary statistics for regression variables

		Obs	Mean	Std Dev	Min	Max
Polity IV	overall	N=3888	0.125257	7.566292	-10	10
	between	n=102		6.355135		
	within	T=38.1176		4.093274		
PRC	overall	N=3875	0.8237419	0.9294438	1	2
	between	n=102		0.7539691		
	within	T=37.9902		0.5423517		
Log military burden Mixed	overall	N=3502	1.248215	1.088681	-6.28815	4.940395
	between	n=102		0.986025		
	within	T=34.3333		0.56847		
Log military burden SIPRI	overall	N=965	1.151661	1.009376	-6.28815	3.533662
	between	n=96		0.969989		
	within	T=10.0521		0.252934		
Log military burden COW	overall	N=3488	1.233788	1.09539	-6.23354	4.940395
	between	n=101		0.980626		
	within	T=34.5347		0.57096		
Log GDP per capita	overall	N=3640	7.331062	1.621833	-3.8512	10.51303
	between	n=102		1.563136		
	within	T=35.6863		0.431076		

4.8 List of Countries Included in Sample

Albania, Algeria, Angola, Argentina, Australia, Austria, Bangladesh, Belgium, Benin, Bolivia, Brazil, Bulgaria, Burki Faso, Burundi, Cameroon, Canada, Central African Rep., Chad, Chile, China, Colombia, Congo, Rep., Costa Rica, Cuba, Côte d'Ivoire, Denmark, Dominican Rep., Ecuador, Egypt, El Salvador, Ethiopia, Finland, France, Gabon, Ghana, Greece, Guatemala, Guinea, Honduras, Hungary, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Korea, South, Laos, Lebanon, Lesotho, Liberia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mexico, Mongolia, Morocco, Mozambique, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Syria, Tanzania, Thailand, Togo, Trinidad & Tobago, Tunisia Turkey, UK, USA, Uruguay, Venezuela, Zambia, Zimbabwe.

5 Military Spending and Democracy

5.1 Introduction

The 1990s saw the spread of democracy to many countries, particularly in the former Communist bloc, but also throughout the rest of the developing world. It brought with it an easing of tension in international relations and ended history's greatest arms race. It has been argued in the political science literature that democratic rule has a demilitarising effect. This idea dates back to the philosopher Immanuel Kant (1795, p. 94), who argued in his essay *Perpetual Peace* that "standing armies (miles perpetuus) shall be abolished in course of time", as countries increasingly embrace the ideas of liberalism.

This implies that democracies should spend less on the military than autocracies do. The objective of this paper is to examine this hypothesis. I model my investigation on the empirical literature on the demand for military expenditure. While papers in this genre generally include democracy as a control variable, with a few exceptions, it is not the focus of their enquiry. Hence, problems in empirically assessing the effect of democracy on military expenditures have been overlooked. In particular, problems concerning data quality and the appropriate measurement of the key variables, as well as the question of causality have not been addressed systematically.

This paper investigates empirically whether democracies have lower military expenditures than autocracies. It employs an unbalanced panel of 112 countries over the period 1960-2000 to estimate a standard demand for military spending, controlling for a number of economic and strategic variables including democracy, which is examined in depth. In particular, it attempts to address the above mentioned problems in the existing literature. This chapter is structures as follow. First, I introduce the theoretical reasons for expecting democracies to allocate fewer resources to the military than autocracies. Subsequently, I review the literature on the demand for military spending, focusing in particular on findings regarding the effect of democracy. Next, I briefly introduce the data and methodology employed in this chapter, before turning to the empirical results.

Initially, I estimate a standard demand for military expenditure model to capture the effect of democracy. However, as was shown in chapter 4, there are reasons to believe that causality between military spending and democracy may run the other way. Thus, I also estimate a 2SLS model and follow up with a Granger causality test. Finally, I explore whether there are structural differences in the standard determinants of military expenditure across autocracies and democracies.

5.2 Theory

There are several reasons why one might expect democracies to spend less on the military than autocracies. One line of reasoning suggests that democratic leaders are accountable to the broader public which tends to prioritize social spending over spending on the military. Rosh (1988, pp. 676-681) argues that this is because “the degree of openness of the political process with regard to debates on resource extraction and allocations serves to limit both the public economy and the military burden of a given state”. He hypothesizes that “the greater the extent a country is governed by the rule of law, where decisions as to allocations are debated openly by elected representatives and alternative priorities are able to compete in this open arena, the smaller may be a state's military burden”. Hewitt (1992, p. 131) also argues that “the policies of democracies are closer to the desires of the public, in which case the higher military spending in countries dominated by other forms of government would reflect a greater preference for military expenditure by the leadership relative to the population”.

Nordhaus, Russet and Oneal (2012, p. 498) restate this argument: "Autocrats are able to extract private goods from rents associated with a successful use of military force internationally and impose much of the cost of fighting, and the price of any failures, on the general population". Kimenyi and Mbaku (1995) make a similar argument: in dictatorships, competition for rents is dominated by groups who have a comparative advantage in violence, whereas in democracies, where rent-seeking by the military is confined to political lobbying, military expenditures will be lower.

Another reason why democracies might be expected to have lower military spending is that they are less likely to go to war. The so-called "Democratic Peace Theory", dating back to the Philosopher Immanuel Kant (1795), argues that democracies do not go to war with other democracies (see also, Doyle, 1986; Russet, 1993). In addition, scholars have presented evidence that democratic leaders are more risk-averse towards war in general than dictators are. Bueno de Mesquita, Morrow, Siverson and Smith (1999) argue that because they risk being voted out of office if they lose, democratic leaders are more careful to enter a war. Jackson and Morelli (2007, p 1354) suggest that while in democracies leaders face the same costs and benefits from war as the average citizen does, dictators gain disproportionately more from war. They reason that "in an authoritarian regime, it may be that a leader can keep a disproportionate share of the gains from a war. It may also be that the leader sees other gains from war, in personal recognition or power". Dictatorships' higher propensity for war will be reflected in their higher defence budgets.

Finally, military spending may be higher in dictatorships because the dictators often lack popular legitimacy and rely instead (at least in part) on the military to maintain power. Not only are autocracies more likely to experience violent uprising, they are also more incline than democracies to meet it with large-scale force (see, for example, Goldsmith, 2003). However, Acemoglu, Ticchi and Vindigni (2010, p. 2) argue that a powerful military is a "double edged sword". On the one hand, a more powerful military is more effective in putting down uprisings. On the other hand, a more powerful military is better positioned to orchestrate a military coup. Thus, to ensure its loyalty, a dictator must make greater concessions to the military, which will be reflected in a higher defence budget.

5.3 Literature Review

The research on the determinants of military expenditure is substantial, dating back to before the 1980s. While a number of studies consider the effect of regime type, barring a few exceptions, this has not been the focus. Moreover, with the development of more sophisticated econometric techniques and availability of more reliable data, many studies are now outdated. In this section, I review some of the more recent papers.

Dunne and Perlo-Freeman (2003) investigate the demand for military spending in developing countries using a panel of 98 countries from 1981 to 1997. While regime type is not the focus of this study, they do control for the effect of democracy using the POLITY98 index. Estimating a static fixed effects model, the authors find that a small, negative, significant effect of democracy on military burden. Using a dynamic panel, however, they find that democracy is insignificant. Similarly, Goldsmith (2003) investigates the determinant of military spending, but studies a wider sample: he assembles "an extensive dataset, covering all states in the international system (as listed by COW) for just over a century, from 1886-1989" (Goldsmith 2003, p. 560). He finds that regime type has a significant negative effect on the defense burden. This result is robust across all models (including fixed effects). Collier and Hoeffler (2007) focus on the effect of arms races on military spending. Nevertheless, they also find that democracy, as measured by the Polity III index, has a significant negative effect on military spending. Using global data for the period 1960–99, they find that "a dictatorial society will spend 2% of GDP more on the military, controlling for other characteristics, than a fully democratic society" (Collier and Hoeffler 2007, p. 10). Most recently, Nordhaus, Oneal, and Russett (2012), in considering the effects of the international security environment on national military expenditures, find a small, negative semi-elasticity of military expenditures with respect to democracy. "These results were less robust than [their] estimates of the impact of the threat environment, but they indicate clearly that democracies spend substantially less on the military than do autocracies" (Nordhaus, et al 2012, p. 505).

To the best of my knowledge, only a handful of studies focus explicitly on the effect of democracy on military expenditure. Yildrim and Sezgin (2005) use a panel of 92 countries for the period 1987 – 1997 and find that in a random effects model an increase in democracy decreases military. However, once fixed effects are included, the effect of democracy is no longer significant. Fordham and Walker (2005) use data "a wide a range of states since 1816"

(Fordham and Walker 2005, p. 141) and find support for the liberal argument that democracy has a demilitarizing effect.

Moreover, the paper by Kimenyi and Mbaku (1995) is the only paper that accounts for the possibility of reverse causality between military expenditure and democracy. Focusing on a cross-section of 87 developing countries in the year 1980 and using an instrumental variable approach, they find a negative relationship between military expenditures as a percentage of government expenditure and Bollen's Political Democracy Index.

Beyond the determinants of military expenditure literature, other scholars have studied military expenditure and democracy. Lebovic (2001) studying Latin America over the period 1974-1995, examines whether democracy shifts budget priorities from military spending to civilian spending. However, his dependent variable is change in budget shares rather than military expenditure itself. Nevertheless, he finds evidence that "democratization can bring changes in national priorities" (Lebovic 2001, p. 450). Garfinkel (1994) models military spending under electoral uncertainty associated with political competition, and finds that democratic governments are biased against military spending. This, she argues, has the effect of reducing arms races and, ultimately, the severity of conflict.

The above review of the literature evidences that democracy appears to have a negative effect on military spending. This chapter attempts to update and expand, as well as address a number of shortcomings in these studies. Firstly, the quality of the military expenditure data in some of the above studies is questionable. Currently, the most comprehensive data on military expenditure publicly available is that published by SIPRI. However, as explained in chapter 3, SIPRI itself states that the data found in yearbooks prior to 1988 should not be used. While some studies (for example, Collier and Hoeffler, 2007) simply ignore this advice, other studies avoid this problem by focusing their analysis on the period after 1988 (for example, Dunne and Perlo-Freeman, 2003). Doing so disregards information prior to 1988. Studies focusing on longer time spans tend to employ COW data, which is generally considered less reliable. Clearly there is a trade-off between quality of data and richness of analysis that comes from studying a longer time-period. Nordhaus et al (2012) suggest that the most reasonable approach is to focus on the period 1960 to present and combine COW data with SIPRI data. The present analysis follows the example set by these authors.

Secondly, largely because the effect of regime type was not the primary focus of the majority of the studies review above, the question of how democracy is best measured is not addressed in this literature. As discussed at length in chapter 3, the choice of measure is important. Moreover, the Freedom House and Polity indices, which have been the preferred measures in this literature, have been widely criticized (see, for example, Gleditsch and Ward 1997; Cheibub, Gandhi and Veerland 2010). In this chapter, I address the question of choice of measure by using two types of measures: a discrete ordinal variable (Polity IV) and a categorical measure (PRC).

Finally, as mentioned above, with the exception of Kimenyi and Mbaku (1995), none consider the possibility of reverse causality. The reasons for suspecting that military expenditures may, in fact, be influencing democracy have been extensively described in the previous chapter. To summarize, military spending may reflect the degree of political power of the military, and a politically powerful military may, in turn, hinder the transition to and consolidation of democracy. Kimenyi and Mbaku's investigation is limited to cross-sectional study of the year 1980, and can thus hardly be considered definitive. This chapter investigates this issue in more depth.

5.4 Data and Methodology

5.4.1 Data

This chapter uses a panel of up to 112 countries over the period 1960-2000. Data on military spending is combined from the Correlates of War (COW) National Material Capabilities database and the Stockholm International Peace Research Institute (SIPRI) military expenditure database. Following Nordhaus, Oneal and Russet (2012), I use COW data from 1960 to 1987 and SIPRI data from 1988 to 2000. I control for differences in the datasets with a dummy that equals one when the data source is SIRPI. I also run separate regression using only COW data (covering the period 1960 to 2000) and only SIPRI data (covering the 1988 to 2000). I transform all data into percentages of GDP using GDP figures (in constant 2000 USD) from the World Bank World Development Indicators to get a measure of military burden.

I use two measures of democracy: Marshall and Jaggers (2002) Polity IV and Reich's (2002) dataset of political regime change (PRC). As described in the chapter 2, Polity IV is a discrete

ordinal variable which ranks countries on a scale from -10 to +10, with higher values indicating more democracy. PRC is a categorical measure, which groups countries into autocracies (PRC=0), semi-democracies (PRC=1) and democracies (PRC=2).

Dummy variables on wars - internal and external - are from the Correlates of War Project. Data on GDP per capita (in constant 2000 USD) and total population are taken from the World Bank World Development Indicators; and data on openness, defined as exports plus imports divided by GDP (in 2005 constant US Dollars) are from the Penn World Table.

I transform military burden, GDP per capita, population, and openness into logs to scale down the variance and reduce the effect of outliers. Table 5.A1 in the appendix outlines the summary statistics for all variables.

5.4.2 Methodology

I estimated a standard demand for military expenditure model (see for example Dunne and Perlo-Freeman, 2003). I regress the log of military burden on democracy (Polity IV or Reich), intrastate war, interstate war, log GDP per capita, log population and log openness.

$$Log\ Burden_{it} = \beta_0 + \beta_1 Democracy_{it} + \beta_2 Intrastate\ War_{it} + \beta_3 Interstate\ War_{it} + \beta_4 \log GDPpc_{it} + \beta_5 \log Population_{it} + \beta_6 \log Openness_{it} + u_{it} \quad (5.1)$$

Internal and external wars pick up immediate threats. A country engaged in war will not only give greater priority to military spending as a matter of urgency, but will also need to restock arms and ammunition used in fighting (see, for example, Hewitt, 1992).

GDP per capita is a measure of wealth, while population is a measure of size. While the former is expected to have a positive effect on military spending, the literature is divided on what effect the latter should have. While Kimenyi and Mbaku (1995) argue that larger countries require bigger defence forces, and Hewitt (1992) maintains that larger countries tend to be major regional or global military powers, Dunne and Perlo-Freeman (2003, p. 468) contend that “a large population is considered to offer some autonomous security in itself”. Moreover,

countries with large populations may be more likely to rely on manpower, while small countries turn instead to high-tech weaponry, which is relatively more expensive.

Openness is a proxy for economic integration. The rationale behind the inclusion of this variable is that the more open a country is, the more peaceful will be its relationships with other countries, and therefore the less need it has for defence spending. However, the opposite has been argued for developing countries: the level of economic integration may, in fact, be a source of discontent, as dependence on the world market renders their economies more vulnerable to fluctuations in world prices. In addition, the benefits of trade only accrue to certain groups (i.e. the elites). In anticipation of resulting internal dissent developing countries may become more militarized with increasing openness (Rosh, 1988). It is worth pointing out that while it could be argued that the fact that arms trade is included by definition in total trade could lead to problems of simultaneity, it makes up such a small proportion of that this is unlikely to pose a problem.

It is worth noting that the model was chosen in this particular form for its ease of interpreting the coefficients. It is also possible to reparameterise the model to express it in terms of absolute military expenditure. Let m be log military expenditure, y be log GDP and p be log population. Then equation 1 one can be written as

$$m - y = \cdots + \beta_4(y - p) + \beta_5 p + \cdots \tag{5.2}$$

and reparameterised as

$$m = \cdots + (1 + \beta_4)y + (\beta_5 - \beta_4)p + \cdots \tag{5.3}$$

The baseline model is a one-way fixed effects model estimated with the combined data from SIPRI and COW. I include a dummy in this regression to control for any differences between the two data sets. In addition, I control for time effects in a two-way fixed effects model. As mentioned above, I also run separate regressions on the SIPRI and COW datasets alone as additional robustness checks. I control for group-wise serial correlation and

heteroscedasticity[25] by reporting robust standard errors. I run two sets of regressions, first using Polity IV and second PRC as the measure of democracy.

It is also worth pointing out that in spite of it being a prevalent methodology in the international relations and international political economy literature, I do not do a dynamic panel analysis. In the demand for military expenditure literature, one might argue in favour of the inclusion of a lagged dependent variable to measure, for example, budgetary inertia. Whitten and Williams (2001) use dynamic panel analysis to measure the effect of government ideology on military spending, while Lake (2007) estimates the influence of a dominant state on the military burdens of subordinate state. However, as discussed extensively in the introduction to this thesis, dynamic panel models problematic. Gaibulloev et al. (2014) argue that dynamic panel estimates suffer from inconsistency and invalid statistical inference. Inconsistency is caused by Nickell bias, which occurs in fixed-effects estimation with N>T (which is the case in this chapter and others). In addition, another source of inconsistency is cross-sectional dependence, which occurs because countries respond to similar political, economic and geographical factors. For example, countries may respond to similar security threats, an important determinant of military expenditure. The problem of cross-sectional dependence shall be discussed in more detail in chapter 7. Gaibulloev et al. demonstrate that once these problems are corrected for, relationships between variables (they use the example of terrorism and economic growth) disappear. Finally, as discussed in the previous chapter, Gundlach and Paldam (2012) argue that including a lagged dependent variable in addition to country and time fixed effects strips out too much variation in the data.

5.5 Results

5.5.1 Polity IV

Table 5.1 summarizes the results for regressions using Polity IV as the measure of democracy. Polity IV is significant and negatively correlated with military burden throughout all regressions, with the exception of regression 4, the two-way fixed effects model using SIPRI

[25] The presence of serial correlation is likely because the model under consideration is static. The presence of heteroscedasticity can be explained by the fact that the variability of military expenditures differs between countries.

data only. In the baseline model, a one unit increase in Polity IV leads to a 2%[26] decrease in military burden. The transformation of an absolute dictatorship into a perfect democracy results in a 40%[27] decrease in military burden.

Intrastate war has a positive effect on military burden, which is significant in both the mixed

5-1 Estimation results: FE using Polity IV as measure of democracy

	Regression/Estimation Method					
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable is log military burden	One-way Fixed Effects	Two-way Fixed Effects	One-way Fixed Effects	Two-way Fixed Effects	One-way Fixed Effects	Two-way Fixed Effects
	Mixed sources	Mixed Sources	SIPRI	SIPRI	COW	COW
Polity IV	-0.02***	-0.015**	-0.012*	-0.010	-0.029***	-0.017***
	(-0.006)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)
Interstate war	0.15	0.165	0.059	0.044	0.122	0.143
	(0.113)	(0.112)	(0.068)	(0.070)	(0.124)	(0.115)
Intrastate war	0.486***	0.373***	0.094	0.093	0.532***	0.405***
	(0.096)	(0.083)	(0.081)	(0.084)	(0.094)	(0.082)
Log GDP pc	-0.164	-0.464*	-0.518**	-0.393	-0.241	-0.429*
	(0.235)	(0.253)	(0.246)	(0.262)	(0.214)	(0.239)
Log population	0.346***	-0.373	-0.415	0.135	0.129	-0.088
	(0.13)	(0.240)	(0.310)	(0.526)	(0.124)	(0.241)
Log Openness	0.360***	0.235**	-0.031	0.034	0.183	0.165
	(0.112)	(0.107)	(0.139)	(0.155)	(0.111)	(0.110)
Source	-0.294***	0.0219	-	-	-	-
	-0.078	(.1363)	-	-	-	-
Constant	-4.468**	8.961*	11.981***	1.847	0.182	4.523
	(2.154)	(4.94)	(4.293)	(8.858)	(1.848)	(4.842)
Year dummies	No	Yes	No	Yes	No	Yes
N	3891	3891	1248	1248	3874	3874
Groups	112	112	107	107	111	111
R-Sq within	0.1117	0.2108	0.119	0.1459	0.0918	0.2144
R-Sq btw	0.049	0.0023	0.0055	0.0067	0.062	0.0235
R-Sq overall	0.0654	0.0078	0.004	0.0078	0.0732	0.0432
AIC	6309.724	5929.125	126.257	111.605	6494.388	6012.679
RMSE	0.535	0.515	0.23	0.251	0.535	0.523

Notes: Robust standard errors in ();*** p<0.01, ** p<0.05, * p<0.1

[26] Treating Polity IV as a continuous regressor, the interpretation of its coefficient, b, is that it is the partial derivative of ln(Y) with respect to X. So, 100*b (or 100*(-0.02)=-2) is the percentage change in Y for a 1 unit change in X, other things held equal.

[27] A transformation of an absolute dictatorship into a perfect democracy is represented by a change in Polity IV from -10 to 10, or a 20 unit increase. The effect of Polity IV on the log of military burden is thus calculated by multiplying the effect of a one unit increase (as shown in footnote 26) by 20.

sources and COW only regressions. In the baseline model, the presence of intrastate war raises the military burden of a country by a 62.58 %[28] . The lack of significance in the SIPRI only regressions is likely due to the shorter time period under study, a time period during which there were substantially fewer intrastate wars[29]. Interstate war, on the other hand, though positive, is insignificant. This is likely to be the case because interstate wars are less prevalent in the dataset. Whereas there we 400 instances (country-years) of intrastate war between 1960 and 2000, there were only 96 instances of interstate war.

Log GDP per capita is consistently negative, but significant only in regressions 2, 3 and 6. Log population switches signs. This could be explained by population picking up trends in the one-way fixed effects model that are captured by the time fixed effects in the two-way fixed effects model. Moreover, this variable is insignificant (with the exception of regression 1). Trade appears to have a positive impact on military burden and is significant in the mixed sources regressions. However, in the SIPRI only and COW only regressions the significance disappears. This may be due to the problem of simultaneity, which, as mentioned above, is the result of the definition of data on imports and exports including arms trade.

Generally, the presence of year dummies does not change the results beyond a loss in statistical precision. However, in the mixed sources regressions some problems do appear: in addition to log population changing sign, the sign and size of the source dummy and the constant change too. Again this might be explained by trends, which are otherwise captured by the time fixed effects, being captured by the source dummy in the one-way fixed effects model. In particular, because the source dummy equals one when the data sources is SIPRI, and SIPRI data roughly corresponds with the post-Cold War period (1988-2000), it may be picking up post-Cold War effects.

5.5.2 Political Regime Change

Table 5.2 summarizes the results for regressions using Political Regime Change as the measure of democracy. The results are comparable in sign, size and significance to the results with Polity IV. PRC is significant and negatively correlated with military burden throughout all

[28] If the intrastate war dummy switches from 0 to 1, the % impact of intrastate war on military burden is 100[exp(0.486) – 1]=62.58.
[29] Between 1960 and 1988 the COW dataset contains 296 country years of war, whereas between 1988 and 2000, in contains 104.

5-2 Estimation results: FE using PRC as measure of democracy

	Regression/Estimation Method					
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable is log military burden	One-way Fixed Effects	Two-way Fixed Effects	One-way Fixed Effects	Two-way Fixed Effects	One-way Fixed Effects	Two-way Fixed Effects
	Mixed sources	Mixed Sources	SIPRI	SIPRI	COW	COW
PRC	-0.096**	-0.074	-0.135***	-0.124***	-0.177***	-0.068
	(0.046)	(0.051)	(0.044)	(0.042)	(0.047)	(0.049)
Interstate war	0.134	0.139	0.042	0.039	0.107	0.116
	(0.119)	(0.119)	(0.061)	(0.064)	(0.129)	(0.121)
Intrastate war	0.46***	0.364***	0.103	0.108	0.484***	0.378***
	(0.096)	(0.086)	(0.081)	(0.084)	(0.096)	(0.084)
Log GDP per capita	-0.157	-0.505*	-0.428	-0.307	-0.218	-0.486*
	(0.25)	(0.265)	(0.266)	(0.278)	(0.223)	(0.249)
Log population	0.395***	-0.46*	-0.58*	-0.175	0.138	-0.13
	(0.133)	(0.252)	(0.364)	(0.538)	(0.126)	(0.262)
Log openness	0.389***	0.247**	-0.069	-0.022	0.195	0.172
	(0.114)	(0.109)	(0.151)	(0.172)	(0.119)	(0.113)
Source	-0.330***	-0.06	-	-	-	-
	(0.079)	(0.153)	-	-	-	-
Constant	-5.504**	10.817**	16.125***	6.534	0.019	5.592
	(2.248)	(5.361)	(5.188)	(9.371)	(1.944)	(5.435)
Year dummies	No	Yes	No	Yes	No	Yes
N	3446	3446	966	966	3433	3433
Groups	102	102	95	95	101	101
R-Sq within	0.1154	0.2136	0.1748	0.1926	0.078	0.2086
R-Sq between	0.0535	0.0018	0.002	0.0036	0.0738	0.0252
R-Sq overall	0.0707	0.0057	0.0012	0.0027	0.0758	0.0369
AIC	5477.466	5149.676	-91.143	-90.18	5624.69	5178.471
RMSE	0.535	0.508	0.23	0.229	0.535	0.511

Notes: Robust standard errors in ();*** p<0.01, ** p<0.05, * p<0.1

regressions, with the exception of regressions 2 and 6, the two-way fixed effects models using mixed sources and COW data only, respectively. In the baseline model, a change from autocracy to semi-democracy, or from semi-democracy to democracy leads to an approximately 9%[30] decrease in military burden.

[30] If PRC switches from 0 to 1, the % impact of democracy on military burden is 100[exp(-0.096) – 1]=-9.15.

5.6 Robustness

5.6.1 Causality

In order to address the issue, raised above, of endogeneity or reverse causality of democracy, I estimate the model using two-stage least squares estimation (2SLS). Endogeneity biases the coefficient estimates. By applying the weak exogeneity assumption, which assumes that current and past values of the instruments are uncorrelated with the current period error, one can instrument democracy with a lag of itself (Cameron and Trivedi 2005, ch. 22). It is reasonable to assume that, in the absence of shocks, the level of democracy last year is correlated with the level of democracy this year. Furthermore, it is logical that the military burden this year does not affect democracy last year, so that the lagged level of democracy is uncorrelated with the error. However, this requires that military burden is not serially correlated, which is not likely. Thus, this appropriateness of this instrument should not be overstated.

If endogeneity is, indeed, a problem, one should expect the results from the 2SLS regressions to differ considerably from the results of the fixed effects model. Table 5.3 compares the results from the baseline model to those using 2SLS. The results are, in fact, very similar, suggesting that endogeneity is not a problem.

Nevertheless, the results from the 2SLS estimation should not be overstated not only because the instrument is not perfect, but also because the model is only just-identified. It is more efficient to over-identify the model (Baum 2006, p. 191). Theoretically this could be done by including more instruments, particularly those that can be excluded from the right-hand side of the equation (Cameron and Trivedi 2005, p. 757). Acemoglu et al (2001) use settler mortality and Beck and Levine (2000) use legal origin. These instruments have been used in cross-section growth studies. However, they do not show the variation over time that is required for an instrument in a panel study such as mine. In addition, one might test for endogeneity using a Hausman test. However, this test is likely to have low power as the differences between OLS and 2SLS are very small.

Table 5-3 Estimation results: comparison of one-way FE and 2SLS using Polity IV or PRC

	Regression/Estimation Method			
	(1)	(2)	(3)	(4)
Dependent variable is log military burden	One-way Fixed Effects	2SLS	One-way Fixed Effects	2SLS
	Polity IV	Polity IV	PRC	PRC
Democracy	-0.02***	-0.023***	-0.096**	-0.145***
	(-0.006)	(0.006)	(0.046)	(0.045)
Interstate war	0.15	0.134	0.134	0.116
	(0.113)	(0.113)	(0.119)	(0.127)
Intrastate war	0.486***	0.495***	0.46***	0.474***
	(0.096)	(0.099)	(0.096)	(0.098)
Log GDP Per capita	-0.164	-0.223	-0.157	-0.216
	(0.235)	(0.240)	(0.25)	(0.231)
Log population	0.346***	0.275**	0.395***	0.325***
	(0.13)	(0.131)	(0.133)	(0.118)
Log openness	0.360***	0.369***	0.389***	0.396***
	(0.112)	(0.105)	(0.114)	(0.104)
Source	-0.294***	-0.260***	-0.330***	-0.301***
	-0.078	(0.077)	(0.079)	(0.070)
Constant	-4.468**	-2.929	-5.504**	-3.774**
	(2.154)	(2.145)	(2.248)	(1.806)
N	3891	3821	3446	3379
Groups	112	112	102	102
R-Sq within	0.1117	0.1168	0.1154	0.1196
R-Sq between	0.049	0.0461	0.0535	0.0498
R-Sq overall	0.0654	0.0596	0.0707	0.0652
AIC	6309.724	-	5477.466	-
RMSE	0.544	-	0.535	-

Notes: Robust standard errors in ();*** p<0.01, ** p<0.05, * p<0.1

Instead, I test the direction of the relationship by testing for Granger causality (see Granger, 1969; Greene, 2012, ch. 20). This is done by estimating the equation:

$$\Delta y_{it} = \alpha_0 + \alpha_1 \Delta y_{it-1} + \alpha_2 \Delta y_{it-2} + \beta_1 \Delta x_{it-1} + \beta_2 \Delta x_{it-2} + u_{it} \quad (5.4)$$

where Δ indicates the first difference. The specification is a fixed effects model and differencing removes any time trends and reduces serial correlation. X is said to Granger 'cause' y, if, using an F-test, one can reject the hypothesis that the βs are jointly equal to zero.

By switching the dependent and independent variables in the above equation one can then test whether y also Granger 'causes' x.

Table 5.4 summarizes the results from this test using Polity IV as the measure of democracy. In the regression with the first difference of military burden as the dependent variable, the null hypothesis that the coefficients of the lags of differenced democracy are jointly insignificant is rejected. Democracy can therefore be said to Granger 'cause' military burden. In the reversed regression, in which the first difference of democracy is the dependent variable, the null hypothesis that the coefficients of the lags of differenced military burden are jointly insignificant cannot be rejected. Military burden does not Granger 'cause' democracy. These results are consistent with those from the panel IV estimation. Therefore, it seems safe to conclude that the direction of causality flows from democracy to military burden.

Table 5-4 Granger causality test

Polity IV→Military burden (F-test)[1]	Military burden → Polity IV (F-test)[2]
3.86*	1.11
[0.0241]	[0.3321]

P-value in []

[1] Tests for the joint significance of the differenced lagged values of democracy on the first difference of military burden.

[2] Tests for the joint significance of the differenced lagged values of military burden on the first difference of democracy.

Null hypothesis: X does NOT Granger cause Y. * indicates the rejection of the null hypothesis.

5.6.2 Structural Stability Tests

In this section, I test for heterogeneity between the three regime types, democracy, semi-democracy and autocracy, as well as between COW and SIPRI data sets (which essentially equates to the pre- and post-Cold War periods). The objective of such a test is to examine whether the standard determinants of military expenditure behave in the same way across these sub-groups and pooling is therefore justified.

The test is based on Hsiao (1986) and is conducted by comparing the BIC of the pooled model to a BIC based on the split model. The latter is calculated as follows. Let a, b, c denote three

subgroups. The BIC is calculated by running the model on each subgroup, obtaining the log-likelihoods and substituting them into the following formula:

$$BIC_i = \left(LL\,{}_i^{a} + LL\,{}_i^{b} + LL\,{}_i^{c}\right) - 0.5 * \left(k^a + k^b + k^c\right) * \log(n) \qquad (5.5)$$

where k is the number of parameters estimated in each regression and n is the total number of observations. The model with the best fit is the one with the greatest BIC (Smith 2011).

First, the baseline regression (5.1) is run on the whole sample and the BIC is obtained. Secondly, the regression is run on three sub-samples split by regime type, i.e. autocracy, semi-democracy and democracy, and the BIC are obtained for each regression. The combined BIC is then calculated according to the method set out above. Thirdly, the regression is run on two sub-samples split by period, i.e. 1960-1988 and 1988-2000, the BIC is obtained for each regression, and the combined BIC is calculated. Finally, the same process is repeated, splitting the sample both regime type and time period, creating six sub-samples - one for each regime type in each period - and again the combined BICs is calculated. Table 5.5 shows the results of the BIC calculations. Comparing the BICs, it would appear that in both the one-way and two-way models, the pooled model is the one with the worst fit. Splitting the model by regime type improves the fit, but splitting the model by time-period improves the model further. Moreover, splitting the model by both regime type and time-period gives the best fit. These results imply that there is heterogeneity in the parameters across both regime types and time-periods. The determinants of military expenditure behave differently in different types of regimes, as well as in different time periods.

Table 5-5 BIC calculations

	LLi	ki	BICi
One-way			
Pooled	-2731.73	109	-3175.63
Split by PRC	-2009.04	206	-2847.98
Split by time period	-1918.33	210	-2773.56
Split by PRC and time period	-1290.35	326	-2617.99
Two-way			
Pooled	-2528.84	148	-3131.57
Split by PRC	-1693.03	323	-3008.45
Split by time period	-1791.27	248	-2801.25
Split by PRC and time period	-1062.85	364	-2545.24

n=3446; ln(3446)=8.145

Table 5.6 reports the one-way fixed effects regression results for the model broken down into six sub-groups by regime type and by time period. Interstate war has a negative, though insignificant effect on military spending in autocracies is omitted in semi-democracies and has a significant, positive effect on military spending in democracies. The omission in the middle regime-type category is likely due to the low number of observations. Intrastate war, on the other hand, is only significant in autocracies. This is likely because of the lack of intrastate wars in democracies (and semi-democracies). Log population is significant only in autocracies. During the Cold War, population has a positive effect on military spending, after 1988 it has a negative effect. Finally, log openness is significant only in democracies. This may be because democracies are generally more integrated in the world economy. Interestingly, like population, the effect of openness changes from positive to negative after the end of the Cold War. There are several possible explanations for this. Firstly, both variables are trended, so they may be picking up positive trends in military expenditure during the Cold War, and negative trends after. Secondly, there may be non-linearities, implying that the effect may be different at different levels. Thirdly, grouped by regime type and time period, the number of

Table 5-6 Estimation results disaggregated by regime type and time period

	Regression/Estimation Method					
	(1)	(2)	(3)	(4)	(5)	(6)
Period	1960-1987	1960-1987	1960-1987	1988-2000	1988-2000	1988-2000
Regime Type	Autocracy	Semi-democracy	democracy	Autocracy	Semi-democracy	democracy
Interstate War	-0.106	(omitted)	0.1372**	-0.0843	(omitted)	0.0634***
	(.156)		(.0615)	(.17147)		(.0222)
Intrastate War	0.4075***	-0.3545	0.0812	0.3915**	0.1162	0.0612
	(.1025)	(.2489)	(.1313)	(.1922)	(.165)	(.0777)
Log GDP pc	-0.4883*	1.1521	-.1493	-0.4392	0.0761	-0.2615
	(.2791)	(.7085)	(.1875)	(.3294)	(.7807)	(.2113)
Log population	1.1869***	0.2068	0.1173	-1.0861***	-0.7304	-0.058
	(.2211)	(.8374)	(.2917)	(.2867)	(.9259)	(.6726)
Log Openness	0.1898	1.227***	0.506***	0.0705	-0.0002	-0.4262***
	(.1531)	(.4324)	(.1886)	(.3119)	(.1713)	(.1492)
Constant	-15.11***	-14.9913	-1.4835	21.6336	12.4189	5.9431
	(3.1764)	(9.9752)	(4.7566)	(5.1723)	(11.307)	(10.5361)
Year dummies	No	No	No	No	No	No
N	1341	167	845	384	213	496
Groups	71	23	49	59	37	57
R-Sq within	0.1947	0.2967	0.0627	0.0998	0.0392	0.1869
R-Sq between	0.0252	0.0168	0.038	0.025	0.011	0.0016
R-Sq overall	0.082	0.0021	0.0032	0.0229	0.0147	0.0141

observations is in some subgroups is small (167 country-years for Cold War semi-democracies versus 3446 in the pooled regression). However, these explanations must be speculative. The results indicate a lot of heterogeneity which is worth further investigation.

5.7 Conclusion

This chapter has examined the relationship between military expenditures and democracy. While papers on the determinants of military expenditures generally include democracy as a control variable, with a few exceptions, it is not the focus of their enquiry. Thus, aspects of this relationship, in particular, problems concerning data quality, the appropriate measurement of the key variables, and the question of causality have been overlooked. This paper investigates these issues in depth. It found that democracies spend less on the military as a percentage of GDP than autocracies do. The difference in spending is substantial: an absolute dictatorship spends around 40% more than a full democracy. Moreover, causality runs from democracy to military expenditure.

The findings in this chapter have important implications for the results found in chapter 4. In chapter 4, I found that military burden is negatively associated with democracy. For lack of a better alternative, military burden was used as a proxy for political power of the military. However, the result from this chapter that democracy Granger causes military burden and not the other way around, suggests that the findings in chapter 4 need to be interpreted with the utmost caution. Democracy is endogenous to military burden, biasing the results.

This chapter also tested whether the standard determinants of military expenditure are stable across regime types and time periods. Generally, I found that there is substantial heterogeneity amongst the parameters. While I suggested several possible explanations for this, it may be interesting to look into this in more detail.

The finding that democracies spend less on the military than autocracies has interesting policy implications: they suggest that a successful move to democratic rule has a demilitarizing effect. This could prove interesting in the world of development aid, in which there is much debate about how prescriptive aid organizations should be. With evidence regarding the positive effect of democracy on growth being mixed, and dictatorships like China successfully forging their own paths towards economic development, democracy promotion has come to be seen

as Western-centric. The findings of this chapter suggest a different reason why democracy may still be worth pursuing: it leads to lower military expenditures. Not only will this free up resources for other areas of spending, such as health and education, it also has the potential to create a more peaceful environment, for example by reducing arms races. Both of these things are likely to be good for growth in the long-run.

Finally, the arguments presented in this chapter do not distinguish between times of war and peace. Some studies have found that while democracies may be more averse to entering a war, once they do, they will commit to winning (see for example Lake 1994, Goldsmith 2007). This would make an interesting topic for further research.

5.8 Appendix to Chapter 5

5.8.1 Figures and Tables

Table 5-A1 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Burden (SIPRI)	1341	4.160611	3.534496	0	50.24831
Burden (COW)	4097	5.895802	10.23722	0	139.8255
Burden (Mixed)	4134	5.86E+00	1.01E+01	0	1.40E+02
Polity IV	5645	1.094774	7.447481	-10	10
PRC	3877	.823317	.9293922	0	2
Interstate war	4790	0.020042	0.140158	0	1
Intrastate war	4791	0.08349	0.27665	0	1
GDP per capita	4337	4.84E+03	7.15E+03	0.021254	4.65E+04
Population	4797	3.29E+07	1.15E+08	41700	1.26E+09
Openness	4595	65.97842	50.06869	4.262921	622.6263

5.9 List of Countries Included in Sample

Afghanistan, Albania, Algeria, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belarus, Belgium, Belize, Benin, Bolivia, Botswana, Brazil, Brunei, Bulgaria, Burki Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Congo, Dem. Rep., Congo, Republic, Costa Rica, Cuba, Côte d'Ivoire, Denmark, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Ghana, Greece, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea, South, Kyrgyzstan, Laos, Lebanon, Lesotho, Liberia, Libya, Luxembourg, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Rwanda, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, South Africa, Spain, Sri Lanka, Sudan, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Timor Leste, Togo, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, UK, USA, Uganda, Uruguay, Uzbekistan, Venezuela, Viet Nam, Zambia, Zimbabwe.

6 Military Expenditure and Autocracy

6.1 Introduction

In the previous chapter, I found that democracies spend less on the military than autocracies do. Democracy was measured using the Polity IV index, which ranks countries on a scale from consolidated democracy to absolute autocracy. One issue the previous chapter did not address is that measures like the Polity IV index ignore the substantial differences between various forms of democracy and autocracy. According to Gleditsch and Ward (1997, p. 380), "vastly different temporal, spatial, and social contexts support the same autocracy scale value". For example, as noted earlier, the Chinese communist regime, the Burmese military dictatorship, and the monarchy of the United Arab Emirates have all at some point in time held the same Polity IV score, yet the institutional differences between these three dictatorships could not be more pronounced.

According to Geddes (1999, p. 6), "different kinds of authoritarianism differ from each other as much as they differ from democracy. They draw on different groups to staff government offices and different segments of society for support. They have different procedures for making decisions, different characteristic forms of intra-elite factionalism and competition, different ways of choosing leaders and handling succession, and different ways of responding to society and opposition". Understanding these differences is crucial: research in comparative

politics has revealed that qualitative differences across autocracies help to explain variation on a wide variety of outcomes (e.g. Geddes 2003; Wright 2008; Weeks 2008; Aksoy et al, 2011).

This chapter attempts to unpack one particular aspect of the differences between forms of autocracy: military expenditure. I view military expenditure as an instrument a dictator can exploit in order to stay in power. How he utilises this instrument depends on the institutional set up of his regime. In this chapter, I distinguish between military regimes, single-party states and personalist regimes and argue that military regimes should be expected to have the highest military spending.

This chapter is structured as follows: in section 2, I review the relevant literature; in section 3, I develop the theoretical argument as to why different types of dictatorships should spend different amounts on the military; I briefly describe the data and methodology in section 4, present the empirical results in section 5, and conclude in section 6.

6.2 Literature Review

Studying military expenditures in the context of different regime types is important because institutional setups affect the way military expenditures are determined. In the previous chapter, I argued that democracies spend less on the military than autocracies do. I explained that this may be because democratic leaders are accountable to the broader public who generally tend to prioritize social spending (Rosh 1988; Hewitt 1992; Kimenyi and Mbaku 1995; Nordhaus et al 2012); because democratic leaders are more risk-averse towards war in general than dictators are (Bueno de Mesquita, et al 1999; Jackson and Morelli 2007); and because autocracies often lack popular legitimacy, relying instead on the military to maintain power (Acemoglu, Ticchi and Vindigni 2010). I found empirical evidence to support this argument.

A recent study by Albalate et al. (2012) explores the effects of government form, electoral rules, concentration of parliamentary parties, and ideology on military expenditure and finds that there are differences in military spending patterns between different types of democracies. This nuanced examination of different forms of democracy gives new insights into the determinants of military expenditure. If differences between various forms of democracy are significant in explaining patterns in military expenditure, differences between various forms of autocracies may be even more pronounced: usually, in democracies, civil-

military relations are relatively straightforward, characterized by what Huntington defines as "objective civilian control" (Huntington 1995, p. 10). In contrast, civil-military relations in autocracies vary substantially according to the type of authoritarian regime. For example, Huntington differentiates between i) military regimes, in which "no civilian control exists and military leaders and organisations often perform functions only distantly related to normal military mission"; ii) personal dictatorships, in which "the ruler does everything he can to ensure that the military is permeated by and controlled by his cronies and agents, that it is divided against itself, and that it serves his purpose of keeping a tight grip on power"; and iii) one-party states in which "the military is viewed as the instrument of the party, military officers have to be party members, political commissars and party cells parallel the normal military chain of command, and ultimate loyalty is to the party rather than the state".

Nevertheless, the differences in military spending between different types of autocracies remain under-examined. One paper by Kim et al (2013), examines whether military regimes spend more on the military than other political regimes. They distinguish between military, civilian and monarchic regimes, and find that military regimes do, in fact, spend more on the military. In this paper, I argue that the categories of civilian and monarchic regimes do not go far enough in dissecting institutional differences between autocracies. Both personalist regimes and single-party states may be considered civilian regimes, yet as Huntington pointed out, the differences between these regime types could not be more extreme. Moreover, as will become clear in the next paragraphs, my theoretical arguments and my empirical strategy stand in sharp contrast to their work.

6.3 Theory

Before I set out my argument as to why military expenditures should differ systematically between various forms of autocracy, it must be emphasised that the aim of this chapter is not to explain in full how dictators survive, but rather to explore in more detail the particular relationship between dictators and their militaries. Thus, I largely ignore the role of the masses in overthrowing dictators, though I acknowledge their (growing) importance. I argue that whether a revolution is successful or not depends on the dictator's ability to command the loyalty of the military. This was most recently illustrated in Egypt, where Mubarak's fate was determined by the military's choice to side with the people in 2011, as was his successor Morsi's fate, when the military ousted him in 2013. Given the importance of the military's

loyalty for a dictator's survival, I consider it paramount to explore this particular relationship. In fact, a recent paper by Svolik (2013), shows that the likelihood of military intervention in politics is non-monotonically linked to a dictator's need to contract violence: "the likelihood of military intervention will be first increasing and then decreasing in the magnitude of threats from those excluded from power. This counterintuitive relationship emerges because at it is at intermediate levels of mass threats that the military commands resources that are large enough for it to be willing to risk intervention but not sufficiently large enough to completely deter the government from reneging its concessions to the military" (Svolik 2013, p. 767).

I begin with the assumption, first proposed by Tullock (1987), that all dictators seek to stay in power, yet are at constant risk of being deposed. Tullock argues that most of the time the threat to a dictator's power comes from officials of high rank. This argument was fleshed out by Bueno de Mesquita et al (2005) and Haber (2006), who identify the so-called "selectorate" or "launching organisations" as the key to a dictator's survival. While other strands of the literature have focused on the role of the masses in overthrowing dictatorships[31], Svolik (2009, p. 477-478) finds that "an overwhelming majority of authoritarian leaders lose power as a result of a successful coup rather than a popular uprising". Examining "all 316 authoritarian leaders who held office for at least one day and lost power by non-constitutional means between 1945 and 2002", he finds that 32 were removed by a popular uprising, 30 stepped down under public pressure to democratize, 20 lost power through an assassination that was not part of a coup or a popular uprising, and 16 were removed by foreign intervention. The remaining 205 dictators - more than two-thirds of the sample - were removed by government insiders, such as other government members or members of the military or the security forces. Thus, in order to stay in power, the dictator needs to control his elite.

I continue my argument by suggesting, as Wintrobe (1998) did, that dictators have two instruments for staying in power: repression and co-option. Successful repression requires the loyalty of the military. Yet, as Acemoglu et al (2010, p. 2) argue, "creating a powerful military is a double-edged sword for the elite. On the one hand, a more powerful military is more effective in preventing transitions to democracy. On the other hand, a more powerful military

[31] Gandhi and Przeworski (2006), Acemoglu and Robinson (2001), and Boix (2003) identify the possibility of a popular uprising as the central threat to a dictator's power. The events sweeping the Arab World since December 2010 clearly demonstrate that the masses have the power to oust dictators. Their role is becoming increasingly important as social media enables citizens to overcome the coordination problem that has often been cited in the literature as a major hurdle to bringing about revolutions (for example Acemoglu and Robinson 2001).

necessitates either greater concessions to the military or raises the risk of a military takeover". Thus, controlling the military is of paramount importance for a dictator's survival.

As laid out in chapter 2, there are various instruments a dictator can utilise to keep his military in check. These range from recruitment along family or tribal lines, as well as promotions, rotations, retirements, mass purges and executions, to ideological indoctrination, the creation of paramilitary forces and logistics control[32]. Another crucial tool is military expenditure. Nordlinger (1977), Collier and Hoeffler (2006), and Acemoglu et al (2010) suggest that paying soldiers an "efficiency wage" will prevent military takeovers. As noted in chapter 4, this is because when spending per soldier is above a certain level, soldiers are likely to prefer the status quo over democratisation. This idea is supported by empirical evidence from Leon (2012), who finds a negative monotonic relationship between a country's military spending and the probability that it experiences a coup d'état. Powell (2012), using military spending per soldier, also finds that soldiers that are better funded (i.e. with higher military spending per capita) appear to be more content with the status quo and are thus less likely to attempt a coup. Finally, Collier and Hoeffler (2006) claim that the relationship between military spending and the risk of coups is actually non-monotonic or U-shaped: both low and high military spending may positively affect the likelihood of military takeovers, because high military spending affects the power and the influence of the armed forces. Despite some subtle differences in the choice of the appropriate measure of 'buying off' the military, they all generally point to a negative relationship between the risk of military takeovers and the level of defence spending.

I argue that the precise instruments at a dictator's disposal, as well as the choice of instrument, depend on the institutional set up of his regime, and in particular whether the regime is military, single-party or personalist. In the following sub-section, I define these regime types and outline the choices the dictator faces in each of them.

6.3.1 Military Regimes

According to Geddes (2003, p. 51), "in military regimes, a group of officers decides who will rule and exercises some influence on policy". The elite comprises the officer corps of the

[32] "'Logistics control' refers to the oversight of and control over the garrison and movements of military units, access to ammunition and fuel, and supervision of field training exercises" (Hashim 2003, p. 21).

armed forces, over which it exercises full control. This puts the leader (i.e. the chairman of the *junta*) in a precarious position: Ezrow and Franz (2011) find that military regimes are the most likely to experience a military coup, while Fjelde (2010) finds that military regimes run the highest risk of civil conflict. Thus, in military regimes I expect large concessions to the military in the form of higher military spending in an attempt to buy its loyalty.

Moreover, military regimes are more likely to resort to repression: on the one hand, they have a comparative advantage in repression – this being the expertise of the military (Davenport 2007). Military regimes have full access to troops and weaponry, and can thus resort to force and repression more systematically than civilian regimes (Bratton and Van de Walle 1994). On the other hand they lack institutions for efficient co-option, such as political parties, and thus have few alternatives to repression. This increased reliance on repression as a means of staying in power, which necessitates a military that is in good shape, is another reason one might expect higher military spending in military regimes.

6.3.2 Single-Party States

Geddes (2003, p. 51) defines single-party states as "regimes, [in which] one party dominates access to political office and control over policy, though other parties may exist and compete as minor players in elections". The existence of a party allows the regime to gather support among the civilian population (Wright and Escrib`a-Folch 2012) and incorporate a larger proportion of the population into the political process (Davenport 2007). Furthermore, the party organization is a strong and influential institutional structure which is able to monitor all groups in the society. Finally, single-party states possess the institutions (for example legislatures) to deal with demands from competing groups of power (including the military) without challenging the foundations of the regime (Gandhi and Przeworski 2006). These features of single-party states decrease the need to resort to repression.

As Huntington (1995) pointed out, in single-party states, the military is viewed as the instrument of the party and is completely subordinated to it. Various measures are taken to ensure its loyalty: military officers have to be party members and soldiers are promoted according to their loyalty to the party. Prospects for career advancement in the armed forces are dependent on the willingness of military officers to identify themselves with the party. Offers of selective benefits to reward support, combined with the credible threat that these

privileges depend on individuals' loyalty, serve as a strong deterrent against challenges and defections (Wintrobe 1998). Furthermore, soldiers are indoctrinated with party ideology and often party functionaries are embedded in the armed forces to guard against subversive behaviour (Frantz and Ezrow 2011). For example, in Iran, "Islamic Commissars" were assigned to the joint staff down to the platoon level and were responsible for the ideological and political education of the troops. In China under Mao, party propaganda was an important aspect of training (Whitson 1969), and it remains an important means of controlling the People's Liberation Army (PLA) in 2014 (Koh 2000). In addition, single-party regimes often have large non-military intelligence organizations which ensure a wide and pervasive control of the society at large, including the armed forces (Lai and Slater 2006).

The interference of the party at all levels of the military structure makes it difficult for the armed forces to challenge the regime, while the single-party apparatus can easily suppress the opposition within the state apparatus itself (Slater 2003). Because single-party states are able to subordinate the armed forces to the party apparatus, they have less of a need to buy its loyalty. Moreover, since the party allows the regime to gather support among the civilian population, there is less need to resort to state repression than in regimes without mass-based parties. Therefore, one should expect a lower level of military expenditure in single-party regimes than in military regimes.

6.3.3 Personalist Regimes

Geddes (2003, p. 51) characterizes personalist regimes by "the concentration of decision-making and coercive power in the hands of one person, unfettered by a party central committee or institutionalized military decision-making process". According to Geddes (2003, p. 51) "personalist regimes differ from both military and single-party in that access to office and the fruits of office depend much on the discretion of an individual leader". A personalist dictator is able to surround himself with associates, friends and family members, as was the case in the Philippines under Ferdinand Marcos or the Dominican Republic under Rafael Trujillo (Frantz and Ezrow 2011). He mobilises political support by bestowing some material rewards, private goods, to a narrow group of regime insiders (Bratton and Van de Walle 1994).

Personalist regimes may have militaries and parties, but these institutions are not sufficiently autonomous. Often the military is kept weak intentionally through frequent rotations and

purges, preventing generals from building personal power bases with factions of the military. For example, in Iraq, a particularly interesting episode was the purging of war heroes in the aftermath of the Iran-Iraq war because Saddam Hussein feared that certain officers, by distinguishing themselves in the battlefield, had become too popular amongst the armed forces (Hashim 2003). In addition, militaries in personalist regimes are often ill equipped. Instead, personalist dictators tend to favour paramilitary forces, recruited from groups most loyal to him and heavily indoctrinated. In fact, some personalist regimes have multiple paramilitary forces – Gaddafi had no less that 11 - and the role of each is to check to others.

This survival strategy has proven to be quite successful: the empirical evidence suggests that elites in personalist dictatorships have the greatest difficulty ousting dictators, and therefore personalist dictators face the lowest risk of being overthrown in any given year (Ezrow and Frantz 2011). In Chad, for example, effort to topple Idriss Deby failed due to lack of elite unity. Lukashenko in Belarus and Antonio Salazar in Portugal represent similar situations Ezrow and Frantz 2011).

Because power in concentrated in the hands on one individual and because the military is institutionally weak and has little to no bargaining power in personalist dictatorships, I expect the lowest military spending in this regime time.

6.4 Data and Methodology

6.4.1 Data

This chapter uses a panel of up to 65 dictatorships over the period 1960-2000. The sample comprises the dictatorships coded as military, single-party and personalist by Ezrow and Frantz (2011 - see discussion below). It must be noted that their dataset only contains observations on dictatorships, while non-autocratic countries are excluded. Countries which have transitioned to democracy or are experiencing a spell of democracy between years of dictatorship are not observed in those particular years. Thus, the panel is unbalanced. I considered balancing the panel by assuming that all county years not coded as a dictatorship

must be democracies. However, this approach seemed too simplistic and would have required a number of subjective judgements to be made on coding semi-democracies.[33].

Data on military spending is combined from the Correlates of War (COW) National Material Capabilities database and the Stockholm International Peace Research Institute (SIPRI) military expenditure database. Following Nordhaus, Oneal and Russet (2012), I use COW data from 1960 to 1987 and SIPRI data from 1988 to 2000. To account for potential discrepancies between the two data sets, I include a dummy which equals 1 when the source is SIPRI and zero when the source is COW to capture the effect of using the different sources. I also run separate regression using only COW data (covering the period 1960 to 2000) and only SIPRI data (covering 1988 to 2000). I transform all data into percentages of GDP using GDP figures (in constant 2000 USD) from the World Bank World Development Indicators to get a measure of military burden.

As noted in chapter 3, the Polity Score (Gurr et al 2009) measures the level of democracy in a country according to a 21-point scale ranging from -10 (fully institutionalized autocracy) to +10 (consolidated democracy). It consists of six component measures that record key qualities of executive recruitment, constraints on executive authority, and political competition. I include Polity IV in my regressions because it has been found to be an important determinant of military spending. However, I argue that this measure does not go far enough in dissecting important institutional differences between types of dictatorships. As Geddes, Wright and Frantz (2012, p. 16) point out, "Polity scores measure regime characteristics, but they do not identify the group that selects leaders and implements policy changes". As explained above, I hypothesize that it is precisely these differences that determine a dictator's relationship with the military and hence military spending.

Hence, in addition to Polity IV, I use a categorization provided by Ezrow and Frantz (2011) to measure the effect of regime type on military spending. The authors categorise dictatorships into personalist, dominant-party, military, monarchic, oligarchic, indirect military or hybrid regimes based on who controls policy, leadership selection and the security apparatus. My theory focuses on the three most prevalent regime types, military, single-party and personalist, and I drop the other regime types from my sample. Developing a theory that encompasses all regime categories may be interesting for further research. However, testing

[33] In an earlier version of this chapter, I did, in fact, attempt this, but was told journal referees to cut this section out.

hypothesis relating to regime types for which there are only a few observations may not make empirical sense[34].

As described in chapter 3, Ezrow and Frantz's (2011) definitions are based on Geddes (2003), who categorizes autocracies according to whether "control over policy, leadership selection, and the security apparatus is in the hands of one-party (single-party dictatorships), […] the military (military dictatorships), or a narrower group centred around an individual dictator (personalist dictatorship)" (Geddes, Wright and Frantz (2012, p. 8). The emphasis is on the set of formal and informal rules for choosing leaders and policies. "These rules determine the group from which leaders can be drawn and who influence policy" (ibid, p. 2).

Figure 6.1 shows the number of countries that fall into each of the three regime types by year. Single-party states are the most prevalent form of autocracy through the whole period, though the number declined following the end of the Cold War. Military regimes, though less frequent, also appear to have peaked in the 1970s at the height of the Cold War, then decline in its aftermath. The peak during the 70s can partially be explained by the frequent coups in Latin America. Moreover, as Geddes et al (2012, p. 8) point out, "these developments most

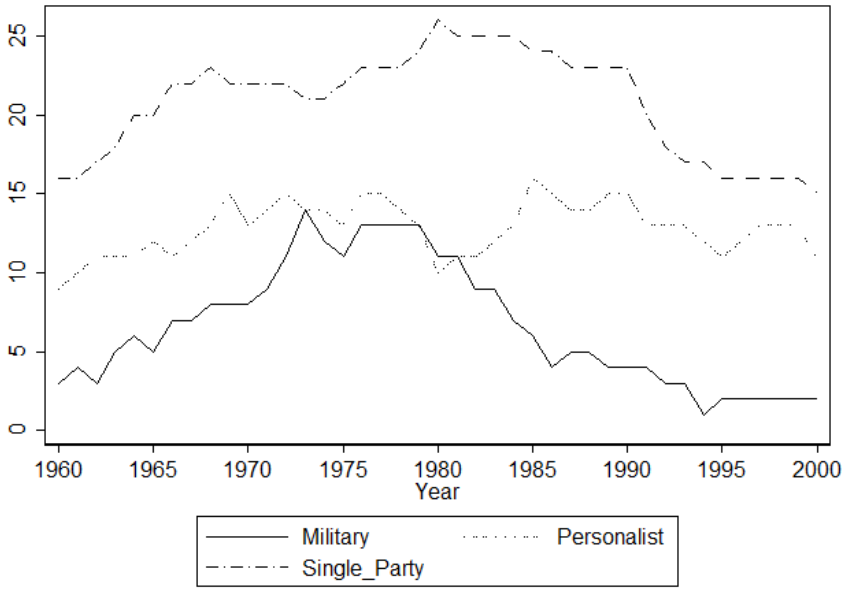

Figure 6-1 Number of pure regimes by type (hybrid regimes are excluded)

[34] For example, only two countries, Egypt and Syria, fall into the hybrid category "triple threat". While these countries make fascinating case studies, it does not make sense to test empirically any hypothesis regarding a triple threat from a single-party, strong military and dictator with personalist tendencies with only two observations.

likely reflect the strategic support of dictatorships in various regions of the world to advance US and Soviet geo-political agendas". The number of personalist regimes, on the other hand, remains relatively constant and is even slightly higher towards the end of the sample compared with the beginning of the period. It should be noted that, given the above observations, the pre-1990s sample has a somewhat different balance of regime types than a post-1990s sample.

As I stressed in the introduction, regime types and the polity IV tell a different story about the infrastructure of an autocracy. Figure 6.2 shows the substantial variations in the Polity score across regime types and within each of them. Single-party regimes receive the highest score, however they also display a substantial variation within this category, as evidenced by the size of the box and the position of the least and greatest values (-9 to + 9, excluding the outliers). Personalist dictatorships receive the lowest score, and display a smaller, but still important, degree of variation across the combined polity IV. Note that the fact that some countries classified as dictators by Ezrow and Frantz, but score 7 or above on Polity IV is due to the discrepancies in coding discussed in chapter 3. As Geddes et al (2012, p. 9) point out, "this probably says more about what the creators of Polity scores chose to measure than it does about anything else".

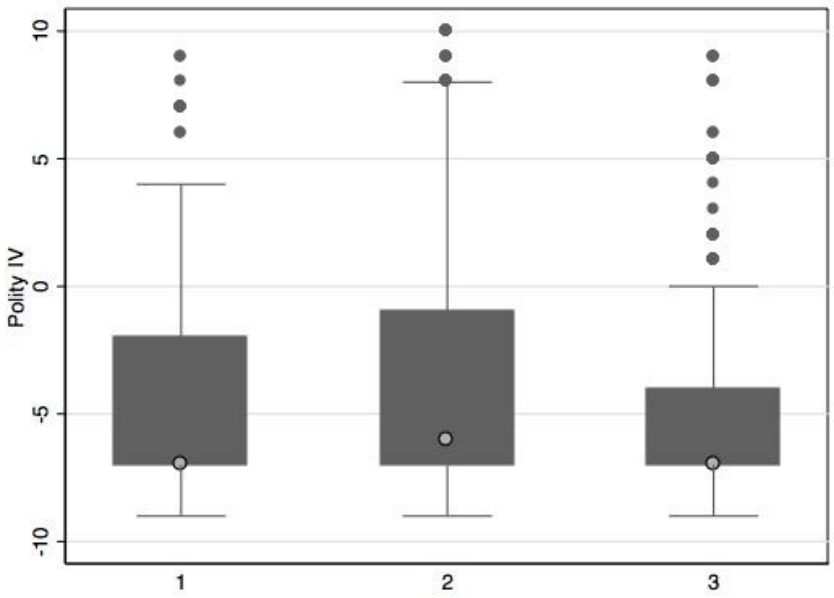

Figure 6-2 Autocratic Regime Types and Polity IV: 1 = Military, 2 = Party, 3 = Personal

It is worth mentioning in more detail the paper by Kim et al (2013), which makes use of a different dataset to explore a similar question. The authors use the dataset by Cheibub, Gandhi and Veerland (2010), which differentiate between monarchies, military regimes and a residual category, which they refer to as "civilian regimes". However, it could be argued that grouping all non-monarchic and non-military regimes into one category conflates important differences between regimes. As set out above, single-party states and personalist regime have very different ways of dealing with the military.

In addition, as mentioned in chapter 3, Geddes et al (2012) point out a number of problems with the Cheibub et al.'s dataset. For example, while Ezrow and Frantz (2011) code regimes as military when dictators govern in collaboration, Cheibub et al. code as military all autocracies led by men who have ever been officers. Why this may be problematic for our research is illustrated by an example cited by Geddes et al (2012): "This means that the Ugandan dictatorship led by Idi Amin from 1971 to 1979 is coded as military by Cheibub et al. but personalist in her data set because Amin marginalized the military from highest level decision making"[35]. Given that my theory specifically mentions the marginalisation of the military in personalist regimes, this example suggests that for the purpose of this research using the Chiebub et al.'s dataset could lead to inaccurate results.

Finally, data on wars - internal and external - are from the Correlates of War Project. Data on GDP per capita (in 2000 constant US Dollars) and total population are collected from the World Bank World Development Indicators; and data on openness, defined as exports plus imports divided by GDP (in 2005 constant US Dollars) from the Penn World Table. I transform military burden, GDP per capita, population, and openness into logs to scale down the variance and reduce the effect of outliers. Table 6.A1 in the appendix outlines the summary statistics for these variables.

6.4.2 Methodology

Following a similar procedure to the previous chapter, the log of military burden is regressed on the regime type dummies, Polity IV, internal war, external war, log GDP per capita, log population and log openness.

[35] Ibid, 17-18.

$$Log\ Burden_{it} = \beta_0 + \beta_1 Regime\ Type_{it} + \beta_2 Democracy_{it} + \beta_3 Intrastate\ War_{it} + \beta_4 Interstate\ War_{it} + \beta_5 \log GDPpc_{it} + \beta_6 \log Population_{it} + \beta_7 \log Openness_{it} + u_{it} \quad (6.1)$$

As stated above, regime types include personalist dictatorships, one-party states and military regimes. As already explained in the previous chapter, intra- and interstate wars pick up immediate threats; GDP per capita is a measure of wealth, while population is a measure of size. Openness is a proxy for economic integration.

The baseline model is a fixed effects model[36] estimated with the combined data from SIPRI and COW. I control for differences in the datasets with a dummy that equals 1 from 1988 onwards when the data source is SIPRI. Moreover, I run separate regressions on the SIPRI and COW datasets alone as additional robustness checks. I control for group-wise heteroscedasticity and serial correlation by reporting robust standard errors clustered on countries[37][38].

6.5 Results

Table 6.1 summarizes my results. Overall, the variables are consistent with recent studies on the determinants of military spending, although the selection of a sub-sample of autocratic regimes only and the combination of clusters at country level and fixed effects renders some of the control variable insignificant at conventional levels.

Military regimes appear to spend more on the military than single-party states and personalist regimes. The difference between military regimes and single-party states is statistically

[36] I confirm the appropriateness of the fixed effects (FE) model over the random effects (RE) model by performing a Hausman test. RE impose the orthogonality condition that regressors are uncorrelated with the error. The Hausman test tests whether this condition is valid. Under the null, both RE and FE are consistent, but RE is efficient. Under the alternative, only FE is consistent. We obtain a p-value of 0.000, suggesting that we must reject the null and FE is therefore the better model.

[37] As already stated in chapter 4, the presence of serial correlation is likely because the model under consideration is static. The presence of heteroscedasticity can be explained by the fact that the variability of military expenditures differs between countries.

[38] Note here another difference between my approach and that taken by Kim et al. (2013): the authors address the issue of serial correlation using the Prais-Winsten approach. This is not suitable for panel data. In particular, it imposes the restriction that the long-run effect of the variables is the same as the short-run effect, which is implausible. A large amount of the serial correlation may come from the fixed effects, which they exclude, and the rest from dynamics, and heterogeneity bias. The problem is indicated by their rho around 0.9.

significant (see table 6.2). Although the coefficient on single-party is positive it is not significant. Thus, it is not possible to determine whether single-party states spend more than personalist regimes.

These patterns holds across all regressions, excepting the fixed effects model run on SIPRI data alone. In this model, the regime type dummies are subsumed in the fixed effects and dropped from the regression. This is easily explained by the fact that this regression uses a much smaller subsample (1988-2000) and thus features substantially less within variation. This illustrates the value added of bringing in the COW dataset: by looking at a longer period, it is possible to make use of the additional within variation. Moreover, the results using only COW data are very close to the model which uses combined sources, demonstrating that these results are robust. Thus, I find support for my hypothesis that military regimes spend more on the military than other forms of dictatorships. Moreover, I find evidence that single-party states spend more on the military than personalist regimes. This is consistent with my priors.

In addition, I find that the effect of Polity IV, while of the expected sign, is, in fact, insignificant. Once the type of dictatorship is accounted for, the effect of the degree of democratization disappears. This suggests that the institutional setup within a regime is important in explaining military expenditures. Significant results are obtain for intrastate war (except in regression 3 using only SIPRI data) and the log of population in regression 1. Reflecting the divergent views on whether and how trade influence military spending, the log of trade is consistently insignificant. Similarly, the log of GDP per capita fails to achieve significance, which is not entirely surprising given the exclusion of democratic (and thus more developed) countries from the sample.

The results for interstate war are less intuitive: the coefficient is negative and insignificant in models (1), (2) and (4), but positive and significant in model (3). I suspect that this may be because model (3) uses only SIPRI data, which is only available from 1988 onwards, and my sample size is thus not only significantly smaller (374 observation versus 1415 observation in our baseline model), but also comprises only post-Cold War years. A closer look at the data reveals that there are only 37 countries in our dataset that experienced interwar, of which only one country fall into the post-1988 period (this country is Iran, which was involved in the Iran-Iraq war from 1980-1988). Because this single observation represents an outlier, the OLS technique will treat it as a dummy, which explains why this variable is highly significant

Table 6-1 Estimation results: static model, various datasets

	Estimation Method			
Dependent variable is log military burden	(1)	(2)	(3)	(4)
	Fixed Effects Mixed Sources	Pooled OLS Mixed Sources	Fixed Effects SIPRI	Fixed Effects COW
Military	0.651**	0.0694	omitted	0.728***
	(3.01)	(0.34)	by STATA	(3.62)
Single-party	0.121	0.607	omitted	0.156
	(0.43)	(1.62)	by STATA	(0.45)
Polity IV	-0.0108	-0.0165	-0.0107	-0.0167
	(-0.98)	(-1.03)	(-0.78)	(-1.57)
Interstate war	0.0611	0.549	-0.593***	0.0495
	(0.19)	(1.60)	(-5.19)	(0.14)
Intrastate war	0.434***	0.584*	0.066	0.577***
	(4.45)	(2.60)	(0.57)	(5.08)
Log GDP	-0.416	-0.123	-0.712	-0.35
per capita	(-0.90)	(-0.91)	(-1.62)	(-0.78)
Log population	0.801***	0.0241	-0.226	0.11
	(3.67)	(0.18)	(-0.37)	(0.64)
Log openness	0.0928	0.0650	0.364	0.0887
	(0.69)	(0.24)	(1.73)	(0.64)
Source dummy	-0.673***	-0.443*		
	(-4.73)	(-2.45)		
Constant	-9.415*	1.122	7.735	1.131
	(-2.39)	(0.52)	(0.87)	(0.33)
N	1415	1415	374	1405
Groups	64	N/A	46	64
R-Sq within	0.1944	N/A	0.1049	0.1041
R-Sq between	0	N/A	0.009	0.002
R-Sq overall	0.0091	0.1041	0.0036	0.016
AIC	2468.654	4619.96	198.1498	2501.162

t statistics in parentheses *p<p.01, **p<p.05, ***p<p.001

Notes: regressions on mixed sources (1-2) cover the years 1960-2000; regression on SIPRI data (3) covers the period 1988-2000; regression on COW data (4) covers the period 1960-2000.

Table 6-2 F-tests for differences in regime type coefficients

Model	Test	H0	HA	P-value
FE, mixed sources	F-test	military-single-party=0	military-single-party≠0	0.037
Pooled, mixed sources	F-test	military-single-party=0	military-single-party≠0	0.163
FE, COW	F-test	military-single-party=0	military-single-party≠0	0.039

Finally, the source dummy is highly significant in explaining military expenditures. As mentioned above, this dummy must be interpreted with caution: because the SIPRI data corresponds with the post-Cold War era, the dummy may, in fact, be picking up a "Cold War effect" rather than an inconsistency between datasets. In fact, given that the results using only COW data are very close to the model which uses combined sources, the former seems more likely. With the exception of model (3), where the fixed effects subsume the military regime dummy, the Akaike's information criteria suggest that model (1) fits the data better than the models (2) and (4), with larger AIC[39].

The principal finding of this chapter is that military regimes are more likely to allocate resources to the military than other regime types. I argue that two simultaneous, yet interrelated mechanisms can elicit this pattern. On the one hand, the military dictator has a natural affinity towards the armed forces and is therefore more likely to redistribute private benefits to the member of his 'club'. On the other hand, the military dictator must ensure the continued support of the military. The majority of military regimes are brought to power through military coups, and it is also the military that ensures their continuation. Military spending is an instrument in the ruler's toolkit to reduce the incentives to stage a new coup. In addition, the dictator needs the active cooperation of the military to successfully repress attempts by the broader population to violently overthrow him. Military spending is an important tool that state leaders can use to get the necessary support from the armed forces. Put differently, dictators need to ensure the loyalty of the military though the optimal manipulation of military spending.

The result that military regimes spend more on the military than single-party states may be surprising, given that countries like the Soviet Union, which spent vast resources on the military, tend to dominate the discussion around behaviour of single-party states. It is worth noting that China, another often discussed single-party state spends only a small share of GDP on the military (2.1% in 2010); instead it spends more on internal security forces. However important, analysis of these two countries alone represents no more than anecdotal evidence. Analysing a large sample of countries (which does not include the Soviet Union for lack of data), I find that single-party regimes spend less on the military than military regimes. I argue that this might be explain by the presence of a mass-based party, which characterises virtually

[39] Additional robustness checks include regressions with a country-specific linear trends and a number of additional control variables, such as Militarized Interstate Disputes data on hostility levels. Results hold to the inclusion of these variables. The results are not presented here, as they do not add real value.

all single-party regimes and allows civil leaders to co-opt and target political opponents selectively, making them more resilient to internal as well as external challenges. Incumbents in single-party autocracies are better equipped than military regimes to co-opt and subordinate potential threats to political control, including the armed forces.

It is important to emphasise that I am not claiming a *casual* impact of regime type on military spending. A positive relation between defence spending and (in particular) military regimes can also arise from causality running in the opposite direction. A military coup, and therefore the installation of a military regime, can be decided by expectations on future military spending growth prospects. However, note that this particular instance of reverse causality is far from obvious: if anything, one should expect a negative impact of military spending on coups d'état. Empirical studies tend to find a negative relationship between a country's military spending and the probability that it experiences a coup. If this is the case, the bias is negative. Nevertheless, it is important to acknowledge this issue. My claim is that, conditional on regime type, military regimes are the biggest spenders on the military, followed by single-party regimes. While there is a possibility that the OLS estimator is biased (although the direction of the bias is not clear-cut), my results provide the best linear unbiased predictor of military spending conditional on having a certain type of regime.

6.6 Conclusion

The Arab Spring highlighted the importance of the military plays in helping or hindering a dictator's survival. Whether the military stands by a dictator or not may be down to a number of factors. This chapter developed an argument around the role of military spending, highlighting its importance as an instrument of co-option. Moreover, it argued that how military spending is used as an instrument of co-option may vary with the institutional arrangements of the regime. In particular, the importance of the military in the institutional infrastructure is found to increase the military's chances for acquiring more resources and to cause more generous allocations to the armed forces.

Following on from this, it explores empirically whether there are differences in military expenditures between different forms of dictatorship: military regimes, one-party states and personalist dictatorships. This chapter contributes to the literature on the demand for military spending. In particular, in builds on the ideas developed in the previous chapter, which

hypothesises that democracies spend less on the military than dictatorships. This chapter unpacks the category of dictatorships and studies it more detail.

This chapter yields the insight that military regimes have the highest level military spending, while personalist regimes exhibit the lowest. This is consistent with the theory developed, which suggests that one-party states and personalist dictators have alternative ways of checking the military and therefore need not buy the support of the military to the extent that military regimes do.

A study of military spending in different forms of autocracy yields some interesting insights about the nature of the civil-military relations and may have a number of relevant policy implications. In developing countries, the armed forces can play two important roles: they are pivotal in bringing about institutional change, and they may be involved in the policy-setting after a successful coup. Without an understanding of the importance of the military apparatus in autocratic regimes, it is difficult to understand how institutions and economic outcomes interact. Many governments of developing countries face considerable risk of a coup d'état perpetrated by their own military. The phenomenon was acute in South America in the 70s and it has been a recurrent phenomenon in Africa and in part of the South-East Asia since the end of the Cold War. Despite several scholarly attempts to disentangle the nexus military allocations- risk of coups, the question of whether and how military spending is responsible for the rising of autocratic regimes - brought into power through military coups - remains open. Therefore, this study has important implications for coup-proofing.

Civil-military relations are also crucial with regard to military effectiveness (Pilster and Bohmelt, 2011). Military spending is one possible dimension along which one can measure the civilian control of the military organization. The analysis presented in this paper, albeit tentative, demonstrates that studies of the impact of regime type on military spending must work from a more sophisticated conception of authoritarianism.

6.7 Appendix to Chapter 6

6.7.1 Figures and Tables

Table 6-A1 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Burden (SIPRI)	376	4.233419	4.383934	0.001858	50.24831
Burden (COW)	1461	7.215286	13.82617	0	139.8255
Burden (Mixed Sources)	1471	7.102561	13.81389	0	139.8255
Polity IV	1647	-4.44202	4.486663	-9	10
Military	1648	0.164442	0.370789	0	1
Single-party	1648	0.51699	0.499863	0	1
Personalist	1648	0.318568	0.466063	0	1
Interstate war	1647	0.022465	0.148236	0	1
Intrastate war	1647	0.099575	0.299523	0	1
GDP per capita	1485	1404.765	2337.105	72.32493	23018.66
Population, total	1648	4.05E+07	1.53E+08	612851	1.26E+09
Openness	1591	62.8	51.10219	4.262921	398.9536

6.8 List of Countries Included in Sample

Albania, Algeria, Angola, Argentina, Bangladesh, Benin, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, China, Republic of Congo, Cote d'Ivoire, Dominican Republic, Ecuador, Ethiopia, Ghana, Greece, Guatemala, Guinea, Guinea-Bissau, Honduras, Hungary, Indonesia, Iran, Kenya, South Korea, Laos, Lesotho, Liberia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mexico, Mongolia, Mozambique, Nicaragua, Niger, Nigeria, Pakistan, Peru, Philippines, Poland, Portugal, Rwanda, Senegal, Sierra Leone, Singapore, South Africa, Spain, Sudan, Tanzania, Thailand, Togo, Tunisia, Turkey, Uganda, Uruguay, Zambia, Zimbabwe.

7 Military Expenditures and Natural Resources in the MENA Region

7.1 Introduction

While world military spending in 2013 was falling, due to reductions in the US and western and central Europe, in many parts of the world the trend in spending is still firmly upwards; most notably in the Middle East, Africa, and parts of Asia and Latin America. This upward trend has been long-standing, but became pronounced in particular during the 2000s.

There are many economic, political and security factors behind increasing military spending in much of the world, but one notable tendency is particularly rapid rates of increase in countries with substantial natural resource revenues, especially oil and gas, and in particular countries that have experienced new discovery and development of such resources in recent years. While this may be expected given the increases in GDP resulting from such new resources[40], the rates of military expenditure increase have sometimes been dramatic, often outpacing GDP growth and leading to a rising military burden – the share of military spending in GDP. Examples come from all regions and include both countries with major security issues (armed conflict or severe tension with neighbours), and those without such direct motivations. Countries with substantial natural resource revenues that saw a more than 90% increase

[40] In fact, the literature on natural resources and GDP is inconclusive (in addition to numerous large N studies, see, for example, Mohaddes and Pesaran (2014), who discuss the impact of oil on the Iranian economy from 1908-2010 and find that oil has at times been a blessing and at other times been a curse).

between 2001 and 2010 include Algeria, Angola, Azerbaijan, Bahrain, Chad, DRC, Ecuador, Indonesia, Iraq, Kazakhstan, Nigeria, Russia, Saudi Arabia and Viet Nam. In most of these cases, the resources in question have been oil and/or gas.

The Middle East has long been a region featuring both unusually high military burdens (see figures A1 and A2 in the appendix) and massive oil wealth, as well as one of high regional tension and conflict. But there are many grounds to suspect a direct or indirect link between oil and military spending and arms acquisition. Firstly, the desire to protect oil resources has motivated spending, and indeed control of resources has been a cause of war in the region (Iran-Iraq, Iraq-Kuwait), as well as of foreign military intervention. Secondly, there have been several examples of 'oil for arms' deals, such as the £20 billion Al Yamamah arms deal between the UK and Saudi Arabia beginning in the 1980s, where payment for the arms was made in kind in the form of oil. It is widely believed that many arms acquisitions especially in the Gulf sub-region are funded directly from oil and gas revenues. As such payments would not show up in the official defence budget, implying that military spending in these countries is even higher than is shown by available data.

The use of oil and other natural resource revenues to fund arms purchases is also seen in other regions. Both Chile and Peru have official mechanisms for funding arms purchases using copper and gas revenues respectively. Venezuela and Viet Nam are also countries that have used oil and/or gas revenues to make off-budget arms purchases.

While there is abundant anecdotal evidence on the connection between natural resource wealth and military expenditure, there are only few papers that test this relationship systematically (see literature review below). This chapter studies the MENA region. The region is particularly interesting for the purposes of this study because it comprises not only countries with some of the highest military burdens in the world, but also those with a long history of oil production. Extensive research in the SIPRI archives has enabled us to put together a longer panel for the MENA region spanning the period 1960-2010, thus allowing for more robust panel and time series analysis. This is the first time this data is being presented and used for analysis.

This chapter proceeds as follows: section 2 reviews the relevant literature; section 3 outlines the reasons why natural resource revenues might be expected to influence military

expenditures; in section 4 briefly introduces the data; section 5 summarises the methodology, section 6 discusses the results; section 6 concludes.

7.2 Literature Review

There are only a handful of papers that examine empirically the direct link between military expenditures and natural resources rents. Perlo-Freeman and Brauner (2012) find that oil revenues have a positive and significant effect on military expenditures in Algeria. Ali and Abdellatif (2013) explore the effects of a range on natural resources from oil and gas to coal, forests and minerals on military expenditure in the MENA region from 1987-2012. They find that only oil and forests have a significant positive effect. Cotet and Tsui (2013) examine the relationship between military expenditure and oil as a robustness check to their bigger study of the oil and conflict: looking over the period 1988-2003, they find that oil-rich non-democratic countries have larger defence burdens.

This chapter draws largely on the literature on the so-called natural resource curse. A thorough review of this literature can be found in Rosser (2006). Rosser notes that this literature consists of three sub-literatures: (1) on the relationship between natural resource abundance and economic performance; (2) on the relationship between natural resource abundance and civil war; and (3) on the relationship between natural resource abundance and political regimes. This chapter focuses particularly on the second and third strands of literature. It should be noted that this literature refers largely to developing countries. The effect of natural resource wealth has been quite different for Norway than for Nigeria[41].

Natural resources have been linked to the onset, duration and intensity of civil war (see, for example, Collier and Hoeffler 1998, 2004). Ross (2004) outlines the different ways in which natural resources are associated with conflict, directly or indirectly: natural resources are linked to conflict through poor economic performance, poor governance, secessionist movements and rebel financing. The following paragraphs review each of these aspects in turn.

[41] Collier (2011) argues that this is because Norway has a high capital to labour ratio.

Natural resources have been linked to poor economic performance (see Rosser 2006, who cites Sachs and Warner 1995; Leite and Weidemann 1999; Gylfason et al. 1999; Auty 2001; and Neumayer 2004 as examples of papers which find empirical evidence from large N studies). Poverty, in turn, is associated with civil war (see, for example, Collier and Hoeffler, 2004; Elbadawi and Sambanis 2002). Collier and Hoeffler (2004) reason that when there are fewer opportunities to engage in productive economic activity, the opportunity cost of joining a rebellion is lower.

Natural resource wealth is also associated with poor governance. Studies have found that resource dependent countries tend to have corrupt governments (Ross (2003) cites Khan, 1994; Leite and Weideman 1999; Marshall 2001; Schloss 2002; Global Witness, 2002). Leite and Weideman (1999) explain that this is due to increased rent-seeking activities that are the result of wind-fall gains provided by natural resources. Schloss (2002, p.5) cites "discretionary powers in the public sector" as a major factor in creating conditions for corruption.

Moreover, researchers have found that natural resource wealth is closely associated with autocratic forms of government (see for example, Beblwai 1990; Wantchekon 1999; Ross 2001; Jensen and Wantchekon 2004). Beblawi (1990, pp. 87-88) explains that natural resource wealth leads to the creation of so-called "rentier states", in which the government receives rents from natural resources, rendering it unnecessary for it to levy taxes on, and reducing its need for accountability towards the population. "With virtually no taxes, citizens are far less demanding in terms of political participation". Put differently, freed from the need to levy domestic taxes, government become less accountable to the citizens they govern. Furthermore, Wantchekon (1999) theorises that inside knowledge of the details pertaining to rents gives an informational advantage to the incumbent which allows him to entrench himself, so that even when elections are held, he would remain in power. Finally, Ross (2003, p.25) adds that another reason why natural resources are associated with autocratic forms of government is that "when governments have an abundance of revenues they tend to use them to quell dissent – both by dispensing patronage and by building up their security forces". Here Ross actually suggests a direct link between resource revenues and military expenditures – one I shall elaborate on below.

Other studies link natural resource wealth to weak government. The reasoning is two-fold. On the one hand, natural resource wealth can weaken the state's territorial control. According to Ross (2003, p. 25), "if a country has a resource that is highly valuable and can be mined with

little training or investment [...] it will be difficult for the government to provide law and order in the extractive region. This opens the door for criminal gangs, warlords and rogue military officers, who may eventually grow strong enough to challenge the government". On the other hand, resource dependence can result in a weak state bureaucracy (see, for example, Beblawi 1987; Fearon and Laitin 2002; Karl, 1997; Mahdavy 1970).

Natural resources are linked with secessionist movements because they give people living in resource-rich areas an economic incentive to separate. Ross (2003) finds that resource inspired insurrections have several common elements: People in these regions have a distinct ethnic, religious or linguistic identity, believe that the central government was unfairly appropriating the wealth that belonged to them, while they themselves bore many of the costs of the extraction process (due to land expropriation, environmental damage, and immigration of labour from other parts of the country), and therefore believed that they would be better off if they were a separate state. Bannon and Collier (2003) find empirical evidence that the discovery of oil greatly increases the risk of a secessionist war.

Finally, natural resources play a major role in financing civil wars. Ross (2003) explains that natural resources provide a good source of rebel financing because they are extremely profitable, and because (unlike manufacturing) their production is tied to a specific location and cannot be easily moved. He describes that "rebels raise money from resources in three main ways: through the direct looting and sale of resources, through the sale of resource futures, and through extortion and kidnapping" (Ross, 2003: 31).

In spite of ample empirical evidence linking natural resources to civil war, it must be noted that this literature is not free from controversy. Rosser (2006) highlights several problems. First, empirical results appear to be sensitive to the choice of measure used to quantify natural resources. "In general, researchers have measured natural resource abundance in terms of either the ratio of countries' natural resource exports to GDP or the ratio of countries' natural resource exports to total exports. When they have used different measures of natural resource abundance, their results have been less clearly supportive of the notion of a resource curse" (Rosser 2006, p. 10). Moreover, it is not clear which resources matter. The literature distinguishes between 'point source' natural resources (oil, minerals and plantation crops), 'diffuse' natural resources (wheat, rice, cocoa, coffee, etc) and 'lootable' resources (e.g. diamonds, drugs) with very different results. Third, there is also some empirical evidence that natural resources may be a blessing not a curse. Cavalcanti et al (2009), studying 53 oil-

exporting countries between 1980-2006 find that once they control for heterogeneity in their sample and adjust their estimation techniques accordingly, oil abundance is in fact a blessing not a curse. Finally, Collier and Hoeffler's (1998) findings have been questioned by other researchers, who have attempted to replicate their findings using an alternative list of civil wars and arrived at different conclusions (see Ross 2004).

This chapter addresses some, but not all, of these issues. It focuses on oil and gas, as these are the most prevalent resources in the MENA region. Moreover, it measures natural resource wealth in the form of rents, which given the mechanisms through which resources affect a countries politics (outlined in the literature above and explained in more detail below), makes the most sense.

7.3 Theory

Drawing on the above literature, it is possible to develop theoretical reasons why natural resources and military expenditure might be directly linked. In Perlo-Freeman and Brauner's (2012), I argue that there are three main channels through which resource wealth affects military spending: conflict, nature of the state and lack of transparency. I shall discuss each in turn.

7.3.1 Conflict

The most obvious link between natural resources and military expenditures is through conflict. The literature review above documents the link between natural resources and conflict. Conflict, in turn, is an important determinant of military expenditures (see, for example, Hewitt, 1993; Dunne and Perlo-Freeman, 2003).

I have already explained how natural resources can be used to finance rebellions. Hence, natural resources are often the object of conflict itself. Protecting and maintaining their hold on them can become a government priority. Thus, even where conflict does not actually occur, the desire to protect e.g. oilfields from actual or potential threats, internal or external, may provide a motive for military expenditure. For example, Brazil justified their recent purchase of submarines partly by the need to protect newly-discovered oilfields (see Perlo-Freeman, Perdomo and Stålenheim, 2009). Likewise, much of Nigeria's recent arms purchases have been

related to protecting oil production in the Niger Delta from insurgents. (Perlo-Freeman, S., Ismail, O. and Solmirano, C., 2010).

7.3.2 Nature of the State

As discussed above, natural resource abundance is associated with poor governance. This can lead to higher military expenditure for several reasons. Natural resource revenues provide a direct source of government revenue that do not require taxing of the general population, which in turn reduces the government's accountability towards the population. Perlo-Freeman and Brauner (2012) argue that this may make it easier for governments to engage in major arms purchases, which if funded through taxation would be extremely unpopular.

Moreover, a state that is highly dependent on resource revenues may lead to regimes whose hold on power – and thus on the flow of resource revenues – depends more on maintaining control of the revenue-generating infrastructure than on promoting the general economic development of the nation. Thus, the military may acquire greater significance as the guarantor of regime survival, whereas governments dependent on general taxation have more need to maintain the consent of the governed.

Resource wealth is frequently associated with authoritarian forms of government. Ross (2003) suggests that when governments have large amounts of revenues they tend to use them to suppress dissent - not only by providing patronage, but also by building up their security forces. Moreover, in chapter 5, it has been shown empirically that autocracies spend more on the military than democracies do.

7.3.3 Transparency

Finally, resource wealth is associated with corruption. Low transparency and corruption potential that can accompany resource revenues may facilitate higher military spending. Resource revenues may be a source of "off-budget" military spending. Resource revenues are in particular used to directly – and often non-transparently – fund major arms purchases; such revenues provide a direct source of foreign currency, but arms procurement contracts frequently offer some of the most lucrative potential for bribes. While off-budget purchases

may not always find their way into published military expenditure figures, the acquired weapons will generate additional operations and maintenance costs.

7.4 Data and Methodology

7.4.1 Data

My sample covers the 18 countries of the MENA region as defined by SIPRI[42]. The MENA region lends itself to this study because it includes both oil-rich economies and countries that are resource-scarce - eight of the regions countries are OPEC members[43], while ten are not - resulting in sufficient variation in the explanatory variable of interest. My sample covers two time periods: 1988-2010 for which SIRPI data on military expenditure is generally available; as well as 1960-2010, for which I was able to unearth data on military expenditure from the SIPRI archives.

While different measures of natural resource wealth are available (Collier and Hoeffler (2004) use the ratio of primary commodities exports to GDP) , rents are used here because the best reflect income accruing to the leaders of a country. Rents account for production costs, as well as price. I use three measures of natural resource rents, taken from the World Bank's World Development Indicators: total natural resource rents, oil rents and natural gas rents. The World Bank defines oil rents as "the difference between the value of crude oil production at world prices and total costs of production"; natural gas rents are "the difference between the value of natural gas production at world prices and total costs of production"; and total natural resources rents are "the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents". All figures are expressed in percentages of GDP.

I control for wealth and size using GDP per capita (in constant 2000 US$) and total population figures taken from the World Bank World Development Indicators. I control for the effect that wars have on military expenditure using a dummy variable which equals one in years in which the country in question experienced a war (internal or external). Data for this variable are compiled from the Correlates of War interstate and intrastate war datasets for the years 1960

[42] Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, the UAE and Yemen, although Iraq and Yemen are excluded from my sample.
[43] Algeria, Iran, Iraq, Kuwait, Libya, Qatar, Saudi Arabia and the UAE.

to 2007, and enhanced using data from the Uppsala Conflict Data Programme for years after 2007.

Apart from outbreaks of actual armed conflict, the Middle East and North Africa have been home to major ongoing international tensions that have created challenging security environments for states in the region, and have been a strong potential motivator of military expenditure. Outbreaks of war have frequently led to long-running rivalries, cold wars, and states of high tension long after the shooting has finished, while on other occasions peace treaties have led to major reductions in tensions and improvements in the security environments of the states involved. Conflicts in one country or between countries have often created 'spillovers', or fears of spillovers, in neighboring countries. Thus, I control for "tension", using the variable constructed specifically for this analysis. A detailed description of how this tension variable is contracted is given in chapter 3. Note that a higher tension score indicated a higher level of tension. Wars a coded separately.

Table 7.A1 in the appendix outlines summary statistics for each time period. Furthermore, table 7.1 below shows mean military expenditure for OPEC and non-OPEC members for each time period. It is evident from these descriptive statistics that the oil rich countries spend substantially more – up to three times as much – on the military.

Table 7-1 Military expenditure in OPEC and non-OPEC countries

			1988-2010		
Variable	Obs	Mean	Std. Dev.	Min	Max
OPEC	123	9141.472	10284.78	414	45245
non-OPEC	206	3135.825	3981.26	243	15982
			1960-2010		
Variable	Obs	Mean	Std. Dev.	Min	Max
OPEC	226	5174.975	7243.144	183.1012	35245.36
non-OPEC	373	2571.371	2964.568	35.12379	11590.52

7.4.2 Methodology

I use three main panel data models to estimate the demand for military expenditure in the MENA region, using the various independent variables listed above. First, as a baseline, a simple pooled OLS model, but this is generally regarded as flawed as it ignores all potential

heterogeneities in the relationship between the variables. Therefore, for the second model, I use the standard fixed effects 'within' model (FEM) that allows for variable intercepts in the regression equation for each country.

The FEM is the most common panel data used for this type of question, as it is the simplest way of capturing the ''average' within variation across the sample of countries, the effects of changes in the independent variables over time on the dependent. Moreover, in the case of the extended time series I am using, where most countries in the sample have at least 30 observations, the 'large T' properties of the FEM begin to apply, allowing the consistent use of a lagged dependent variable.

However, the FEM model still suffers from potential heterogeneity bias, in that it does not allow for the coefficients of each independent variable, to vary between countries, only the intercepts. Moreover, as there are only 16 countries in the sample (and only 13 with T>=30), the large 'N' consistency properties of the FEM do not apply, leading to large standars errors.
I therefore also use, for comparison, the Seemingly Unrelated Regression Equations (SURE) model, which is more appropriate for small-N large-T samples such as ours. This is a two-stage GLS estimation, which first estimates individual regression equations for each country, but then tests for contemporaneous correlations between the residuals for each country. This residual matrix is then used to run a second set of country equations that corrects the regression equations for the correlations between the residuals. The SURE model, while allowing each country to exhibit differing relationships between the variables, takes into account the possibility that the dependent variable may be correlated between countries.

However, SURE estimators are biased and inconsistent if there is cross-country dependence due to common omitted variables correlated with the country-specific regressors. This is highly likely in a region such as MENA, in which the countries are highly connected, sociologically and economically (see Cavartorta 2010 for and in depth discussion of cross-country dependence in MENA).

I estimate three separate equations, one for each of the natural resource rent measures. I regress the log of military expenditure[44] on the natural resource variables, the log of GDP per

[44] It should be noted that while the level of military expenditure rather than the defense burden is analysed here for ease of interpretation, the model presented here is simply a reparameterisation of the models presented in previous chapters (see chapter 5, page 98 for an in depth discussion of reparameterisation).

capita, the log of population, a war dummy which equals one in years in which the country in question experienced a war (internal or external), and a variable I call “tension”, explained in chapter 3. GDP per capita is a measure of wealth, while population is an absolute measure of size. The former is generally expected to have a positive effect on military expenditure: countries with greater income can afford to allocate more resources to the military. My purpose is to examine whether natural resources have an effect on military expenditure beyond a mere wealth effect. By holding wealth constant, it is possible to separate the direct effect natural resource revenues may have on military expenditures. The war dummy picks up immediate security threats, while tension picks up latent threat. One would expect the effect of both to be positive: involvement in a war will require a country to allocate more financial resources to the military as a matter of urgency, while a latent threat might cause a country to mobilise in preparation for war. Note that unlike in previous chapters, I do not control for democracy or regime type. This is because the sample consists entirely of dictatorships. Moreover, because the sample is small, it does not make sense to control for type of dictatorship.

Military expenditures, GDP per capita, and population are transformed into logs to scale down the variance and reduce the effect of outliers. I control for group-wise heteroscedasticity and serial correlation by reporting cluster robust standard errors. I run the model on two time periods: 1988-2010 and 1960 (or from date of independence if this was later)-2010.

7.5 Results

7.5.1 Fixed Effects Estimation

Table 7.2 reports the estimation results for the period 1988-2010. While overall natural resource rents, as well as gas rents appear to be statistically insignificant in the fixed effects model, the log of oil rents has a significant positive effect on military expenditures: a 10% increase in the oil rents is associated with a 1.9% increase in military expenditure. It is perhaps not surprising that oil rents are significant, while other natural resource rents are not, as oil is the MENA regions most prevalent resource. It is noteworthy that the pooled OLS model, which uses both between and within variation, yields very different results from the fixed effects model, which uses only within variation, for all natural resource variables.

Table 7-2 Estimation results: static FE model using overall natural resource rents, oil rents and gas rents, 1988-2010

	Estimation method					
Dependent variable is log milex	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled OLS	Fixed Effects	Pooled OLS	Fixed Effects	Pooled OLS	Fixed Effects
Log NRR	0.00309	0.0126	-	-	-	-
	(0.00841)	(0.0274)	-	-	-	-
Log oil rents	-	-	-0.0100	0.190*	-	-
	-	-	(0.00653)	(0.0742)	-	-
Log gas rents	-	-	-	-	-0.0331***	0.0144
	-	-	-	-	(0.00919)	(0.0155)
Log GDP per capita	1.128***	0.716**	1.145***	0.733**	1.131***	0.673**
	(0.0434)	(0.219)	(0.0479)	(0.213)	(0.0440)	(0.196)
Log population	0.966***	0.833**	0.973***	0.888***	0.959***	0.802***
	(0.0329)	(0.216)	(0.0347)	(0.206)	(0.0327)	(0.191)
Tension	0.111***	0.0565*	0.115***	0.0419*	0.116***	0.0732**
	(0.0186)	(0.0243)	(0.0189)	(0.0162)	(0.0186)	(0.0212)
War	0.311*	0.176	0.315	0.141	0.331*	0.217
	(0.157)	(0.0926)	(0.165)	(0.0953)	(0.157)	(0.112)
Constant	-17.38***	-11.66**	-17.62***	-12.81**	-17.29***	-10.82**
	(0.815)	-3.389	-0.881	-3.425	-0.821	-3.081
Obs	317	317	288	288	295	295
Groups		17		16		16
R Sq within		0.5134		0.6029		0.5612
R Sq between		0.6939		0.3472		0.6847
R Sq overall	0.7898	0.7049	0.7858	0.4089	0.7962	0.6966

Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

The coefficients of log GDP per capita and log population are positive and significant though outall regressions: tension is positive and significant throughout, whereas war is insignificant, with the exception of models (1) and (5).

Table 7.3 outlines the estimation results for the extended time period, 1960-2010. The results confirm the relationship between natural resource rents and military expenditure: only oil has a significant (positive) effect on military expenditures in the fixed effects model (gas rents are significant in the pooled model, but insignificant in the fixed effects model). In the extended time period regressions, the effect of oil is smaller: a 10% increase in oil rents is associated with a 0.7% increase in military expenditures.

Table 7-3 Estimation results: static FE model using overall natural resource rents, oil rents and gas rents, 1960-2010

	Estimation method					
Dependent Variable is	(1)	(2)	(3)	(4)	(5)	(6)
log milex	Pooled OLS	Fixed Effects	Pooled OLS	Fixed Effects	Pooled OLS	Fixed Effects
log natural resource	0.0348**	0.0417	-	-	-	-
Rents	(0.0116)	(0.0286)	-	-	-	-
log oil rents	-	-	0.0250**	0.0698*	-	-
	-	-	(0.00825)	(0.0355)	-	-
log gas rents	-	-	-	-	-0.0782***	-0.0403
	-	-	-	-	(0.0144)	(0.0641)
log GDP per capita	0.830***	0.428	0.833***	0.418	0.970***	0.414
	(0.0534)	(0.336)	(0.0618)	(0.354)	(0.0536)	(0.347)
log population	0.789***	0.612*	0.796***	0.729**	0.858***	0.768*
	(0.0382)	(0.268)	(0.0429)	(0.296)	(0.0370)	(0.270)
Tension	0.137***	0.0616	0.146***	0.0826**	0.100***	0.0941*
	(0.0198)	(0.0313)	(0.0200)	(0.0314)	(0.0183)	(0.0327)
War	1.048***	0.578*	1.006***	0.607**	0.875***	0.620*
	(0.168)	(0.208)	(0.175)	(0.204)	(0.162)	(0.222)
constant	-12.34***	-6.043	-12.46***	-7.815	-14.45***	-8.403
	(0.966)	(4.424)	(1.119)	(5.355)	(0.975)	(4.845)
observations	467	467	421	421	421	421
Groups		16		15		16
R Sq within		0.3478		0.3707		0.3690
R Sq between		0.5996		0.4945		0.4736
R Sq overall	0.5883	0.5200	0.5694	0.4254	0.6205	0.4381

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

GDP per capita and population are positive and significant in most specifications. However, GDP per capita is no longer significant in the fixed effects models. This is interesting particularly in model 4 in which oil does impact military expenditures, but GDP per capita does not, suggesting a direct link between military expenditures and oil.

Tension is positive throughout, but significant only in the pooled OLS models. In contrast, war is positive and significant throughout. This may be because over the longer time period wars occur more frequently. A closer look at the data reveals that, of the 816 country-years of war that occurred between 1960-2010, 57% occured before 1988.

7.5.2 Seemingly Unrelated Regressions Estimation

For the SURE estimation, log military expenditure was regressed on its lagged value, current and lagged log GDP, current and lagged log of oil rents, war and tension. In alternate models, log of all natural resource rents was used. First-stage regressions were carried out for 12 countries where at least 20 observations were available: Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Morocco, Oman, Saudi Arabia, Syria and Tunisia.

The results for the two sets of regressions are qualitatively similar, but with some noticeable differences in terms of which variables are significant. Tables 7.4 and 7.5 summarize the results for the two models. The regressions display, unsurprisingly, a highly heterogeneous set of results, with virtually no consistency between countries, except that the coefficient of the lagged dependent variable is almost always positive and highly significant. GDP is significant and positive in some way for most countries in at least one model, although the nature and significance of the relationship varies. For the 9 countries that had at least one war, the War variable is significant and positive in 4, but significant and negative in 1 and insignificant in the other 4. Tension is significant and positive in 4 countries, but significant and negative in one in the oil model.

In terms of the key resource rents variables, in the model for total rents the joint effect of resource rents (current and lagged) is significant and positive at the 5% level or more for Algeria, Iran, Oman, Syria and Tunisia, but insignificant for the rest. In the model using only oil rents, the effect of these rents is significant and positive at at least the 10% level also for Bahrain, Israel and Jordan, but not for Iran as in the rents model. While this shows at least some (albeit sometimes weak) evidence of an impact of resource revenues for 8 of the 12 countries, the pattern is rather surprising in that some countries with rather limited oil resources (Israel, Jordan, Syria, Tunisia) show a positive effect, while others with large oil resources (Kuwait and Saudi Arabia) show no such effect.

Overall, the results of all the regression models provides some, albeit ambiguous, support for the hypothesis that natural resource rents lead to higher military expenditure in the Middle East and North Africa. The fact that the regression results in some countries fail to provide any clear pattern perhaps emphasizes the poor transparency of military expenditure data in many cases, and/or the lack of any consistency or strategy in budgetary decision-making in the region.

Table 7-4 SURE model using current and lagged log natural resource rents

	Variables					
Country	Lag d.v.	GDP	Rents	War	Tension	Adj. R2
Algeria	+ ***	n/s	+ **	+ **	n/s	.98
Bahrain	n/s	+ j**	n/s	n/a	n/s	.92
Egypt	+***	n/s	n/s	n/s	n/s	.67
Iran	+***	+Δ*	+**	+***	n/s	.84
Israel	+***	-Δ*	n/s	n/s	n/s	.44
Jordan	+***	n/s	n/s	n/a	n/s	.57
Kuwait	+**	+***	n/s	+***	+***	.85
Morocco	+***	+ j***	n/s	+**	+**	.84
Oman	+***	+*	+***	- ***	n/s	.95
Saudi Arabia	+***	+ j*	n/s	n/s	+*	.96
Syria	+***	n/s	+***	n/s	+**	.81
Tunisia	+***	n/s	+**	n/a	n/a	.63

Notes: The adjusted R2 values are from the 1st stage equation
(+/-)*** = level or lag is positive/negative and significant at 1% level ** = 5% level *** = 10% level.
+j * = level and lag are jointly significant at the 10% level with a sum that is significantly positive. +j ** +j *** similar for 5%, 1%.
(+/-)Δ* = The level and lag are jointly significant at the 10% level, with opposite signs, and sum not significantly different from 0. + = current positive lag negative, and vice versa for -.
n/s = level and lag not individually or jointly significant. n/a = variable omitted for colinearity (i.e. no war or tension in country)

Table 7-5 SURE model using current and lagged log oil rents

	Variables					
Country	Lag d.v.	GDP	Oil rents	War	Tension	Adj. R2
Algeria	+ ***	+ j*	+ *	+ *	n/s	.97
Bahrain	n/s	+ *	+*	n/a	n/s	.92
Egypt	+***	n/s	n/s	n/s	n/s	.67
Iran	+***	+**	n/s	+***	n/s	.82
Israel	+***	spec.	+***	n/s	-*	.36
Jordan	+***	spec.	+**	n/a	n/s	.85
Kuwait	+**	+***	n/s	+***	+***	.85
Morocco	+***	+j***	n/s	n/s	+**	.82
Oman	+***	+**	+***	- ***	n/s	.95
Saudi Arabia	+***	+ j**	n/s	n/s	+*	.96
Syria	+***	n/s	+***	+ *	+**	.77
Tunisia	+***	n/s	+*	n/a	n/a	.61

For Israel, the coefficient of ly is -.11 and significant at the 10% level; the coefficient of lylag is +0.12 and significant at the 10% level; the two are jointly significant and do not sum to zero, suggesting a negative effect of change in GDP but a positive effect of lagged GDP.
For Jordan, the coefficient of ly is -.12 and significant at the 5% level; the coefficient of lylag is +0.19 and significant at the 1% level. The coefficients do not sum to zero, suggesting a negative coefficient of change in GDP but a positive effect of lagged GDP.
Other symbols have same meaning as the previous table.

7.6 Conclusion

This chapter explores empirically the effect of natural resources on military expenditure in the MENA region. This chapter represents one of the first systematic explorations of this

relationship. In particular, this chapter explored the effect of oil, gas, and overall natural resource rents on military expenditure. It finds that that oil rents have a significant, positive effect on military expenditures.

Moreover, this chapter uses a longer panel for the MENA region spanning the period 1960-2010, put together through extensive research in the SIPRI archives. This allows for more robust panel and time series analysis. This is the first time this data has been presented and used for analysis. The results hold across both time periods.

These results have several potential policy implications. Firstly, they give new insights into the relationship between natural resources and conflict. In particular, they suggest that where natural resources are present in a country but conflict does not arise, this may be because governments, anticipating conflict, increase military expenditure to protect them. This is in line with Cotet and Tsui (2013, p. 56) finding that "oil wealth increases the defence burden rather than causing more violent challenges to the state". Oil wealth countries are less likely to experience violent challenges to the state not only because they have lower taxes and higher welfare spending, but also because they raise military expenditures.

Secondly, these results shed new light on authoritarian survival strategies. It is often assumed that oil-rich dictatorships survive because they redistribute rents to their citizens. My findings highlight that the repressive capacities of rentier states should not be underestimated.

Thirdly, as mentioned in the introduction to this chapter, arms acquisitions especially in the Gulf sub-region are often funded directly from oil and gas revenues and such payments would not show up in the official defence budget. Thus, the impact of natural resource revenues on military expenditure may, in fact, be bigger than what my model can predict. This research highlights the need for more transparency in the natural resource sector.

Finally, an interesting extension of the research presented here would be to study a larger sample of countries. The MENA region is special in that it consists only of autocracies (with one or two exceptions depending on how the region is defined). A larger sample of countries would allow for the inclusion of regime type measures to distinguish between the effect of natural resource rents on military spending in democracies and dictatorships (the Norway versus Nigeria question mentioned above). Another interesting extension may be to look into other

sources of government revenue that circumvent taxation. These may include official development assistance and US military aid.

7.7 Appendix to Chapter 7

7.7.1 Additional Figures and Tables

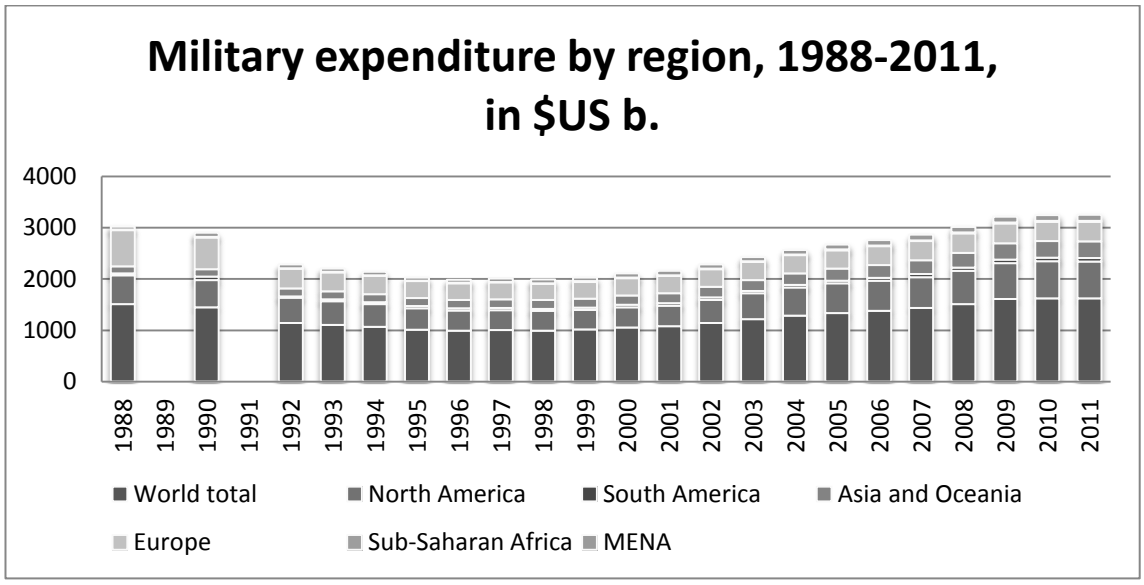

Figure 7-A1 Military expenditure by region

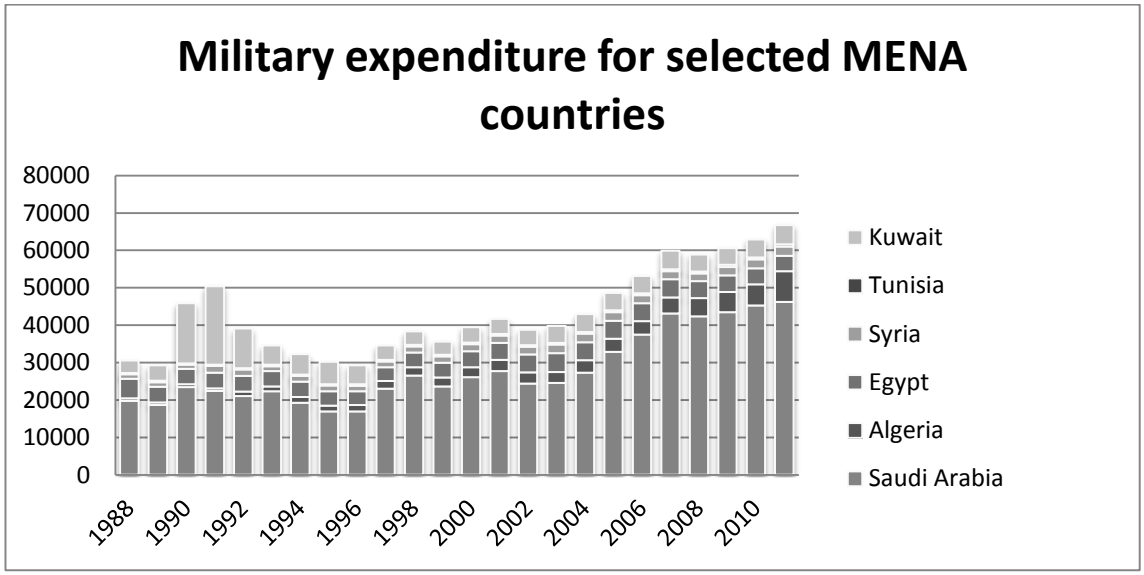

Figure 7-A2 Military expenditure for selected MENA countries

Table 7-A1 Summary statistics

	1988-2010				
Variable	Obs	Mean	Std Dev	Min	Max
Log military expenditures	329	7.83021	1.244873	5.493062	10.71985
Log natural resource rents	357	1.734227	2.767402	-6.08708	4.254943
Log oil	327	1.237738	3.612119	-8.06997	4.166281
Log gas	334	0.135918	2.406216	-7.76099	3.267215
Log GDP per capita	328	8.405831	1.108378	6.817831	10.48417
Log population	365	15.77093	1.414123	12.99891	18.21145
Tension	368	2.880435	1.996413	0	10
War	368	0.059783	0.237406	0	1
	1960-2010				
Variable	Obs	Mean	Std Dev	Min	Max
Log military expenditures	599	7.625034	1.893042	3.558879	16.25089
Log natural resource rents	591	1.910108	2.561712	-6.08708	4.754028
Log oil	537	1.541303	3.332469	-8.06997	4.730893
Log gas	530	-0.22965	2.315581	-7.76099	3.267215
Log GDP per capita	596	8.107288	1.209857	6.082219	10.79426
Log population	797	15.309	1.613752	10.8414	18.21145
Tension	792	2.671717	2.21552	0	12
War	816	0.090686	0.287339	0	1

8 Conclusion

8.1 Insights

In 1992, Francis Fukuyama predicted the “end of history”. After the fall of the iron curtain, it seemed inevitable that all countries would eventually embrace democracy as the only form of government that is sustainable in the long-run. More than 20 years later, over half the world's countries are still classified as autocratic by the Polity IV Project. The Arab Spring, initially perceived with great optimism, appears to be nothing more than a blip.

Why did the Arab Spring fail to bring about democratic change in the MENA region? While this thesis does not assume to know the ultimate answer to this question, it contributes some insights. Chapter 2 discussed in detail the coup-proofing strategies adopted by various dictators of the MENA region. Although chapter 2 was a qualitative study, certain patterns emerged. For example, the ideological indoctrination of militaries is more commonly found amongst one-party states, whereas personalist regimes often pursue divide-and-conquer strategies, exploiting ethnic and tribal differences where they exist and pitting multiple paramilitary forces against each other. Another pattern that emerged was that in countries where the military played a pivotal role in bringing the current government to power, through a military coup, as in Syria, or an independence struggle, as in Algeria or Egypt, it is more likely to assume a political role. These observations were then tested more systematically in later chapters.

The study of coup-proofing is important because although coup-proofing focuses on preventing regime change by the military, it can have consequences for societies as a whole. For example, in Libya, Gaddafi coup-proofed his regime by creating overlapping networks that constantly shifted, causing constant confusion and making it impossible to organise any serious opposition. It can be argued that Gaddafi created a state of such extreme chaos that the country is still struggling in 2014 to fill the power vacuum left by his death in 2011.

In Egypt, Mubarak (and his predecessors) coup-proofed his regime by elevating the military to a privileged position in society and ensuring that it had a stake in the continuation of his rule. Although he ultimately failed to secure the military’s loyalty, he created a military so attached to its privileges that it end up opposing democracy.

In chapter 4, this observation was converted into a hypothesis and tested systematically. Chapter 4 yields the general insight that countries in which the military is politically powerful before transition to democracy occurs are more prone to revert back to autocracy. This insight offers important lessons for policy makers: not infrequently it is militaries that form transitional governments after revolutions because they are the only group organised enough to do the job. Yet as Huntington (1957) suggests, objective civilian control of the military is likely to be better for democracy in the long run. Politicians must "resist the temptation to bring the military into the domestic political arena" (Desch, 1996, p. 14).

Some of the above discussion implicitly agrees with Fukuyama that democracy is somehow a more desirable form of government. While this thesis does not state this explicitly, chapter 5 suggested one reason why this may, in fact, be true: democracies spend less on the military than autocracies. This is beneficial for several reasons. Firstly, it implies that democracy has a demilitarising effect. High military spending can be perceived as a threat by enemies and can lead to arms races and conflict. Democracy then implies a more peaceful world. According to the Institute of Economics and Peace, who publish the Global Peace Index, there are quantifiable benefits to be reaped from peace. It estimates that "the economic cost of violence to the global economy is equivalent to around US$1,350 per person, or twice the size of Africa's economy" (Institute for Economics and Peace, 2014).

Secondly, in a world of limited resources, governments must trade-off military spending and social spending, the so-called guns-versus-butter trade-off. Citizens generally prioritise social spending. Thus, in democracies, government spending is better aligned with citizens' preferences, resulting in higher social welfare.

Chapter 6 studied differences between military, single-party and personalist regimes that emerged from chapter 2. It expanded the sample under study from the MENA region to dictatorships in general. It theorised that there are commonalities within typologies of dictatorships – military, single-party and personalist – regarding how dictators ensure their survival: military regimes are more likely to rely on force, single-party states use the party apparatus, and personalist regime tend to rule by a means of a divide-and-conquer strategy. Chapter 6 predicted that this should result in discernible differences in military spending amongst the three types of regimes. In keeping with the theory, it found that military regimes allocate the greatest resources to the military.

Another interesting finding was that, contrary to what anecdotal evidence might suggest, single-party states do not spend the most on the military. Discussions around behaviour of single-party states tend to be dominated by the two giants, China and the Soviet Union, eclipsing all else. This finding highlights one of the strengths of econometric analysis: the ability to push beyond subjective findings based on single case studies. While every dictatorship is unique in some way, understanding these general patterns can be useful, especially for actors wishing to encourage regime change and democratisation.

An interesting question for further research may be whether certain types of regimes are more likely to emerge because certain characteristics and conditions existing in a country predispose it to one type of dictatorship or another. For example, personalist dictatorships might be more likely to emerge in ethnically heterogeneous countries where divide-and-conquer tactics can be more easily exploited.

Finally, chapter 7 looked at countries in which resources are not quite so limited, i.e. countries with natural resource wealth, and finds that in the MENA region natural resource rents are associated with higher military expenditures. To understand the full welfare implications of natural resource wealth it would also be necessary to study the linkages between resources and social spending, and whether there is a trade-off with military spending. Unfortunately, this is complicated by the fact that it is difficult to get disaggregated data on government spending that is comparable across countries. Chapter 7 highlighted the need for more transparency around natural resources. An interesting development in this area has been the creation in 2004 of the Extractive Industries Transparency Initiative (EITI), a global coalition of governments, companies and civil society working together to improve openness and accountable management of revenues from natural resources. At the time of writing it has 45 countries signed on to their mission. As more countries sign on, the hope is that transparency around natural resources will improve.

8.2 Problems

As with most research, this thesis encountered many problems, not all of which were possible to resolve. The most obvious problem was the availability of data with which to capture key variables. As discussed extensively in chapter 3, military spending data is notoriously unreliable. Moreover, the profusion of datasets measuring democracy and regime type

suggest a certain difficulty in quantifying such complex concepts. Capturing the political power of the military, on the other hand, is so complicated that hardly any data exists at all. This thesis has done the best it can by using what data is available and by checking that results hold across different measures. For chapter 7, additional data on military spending in the MENA region was collected, enabling more robust analysis for this subset of countries. Extending the entire military expenditure database back to 1949 remains an important ongoing project at SIPRI, and if completed will enable more robust research. It would also enable the extension of chapter 7 to a wider sample of countries. The MENA region is special in that it consists almost exclusively of autocracies. A larger sample of countries would allow for the inclusion of regime type measures.

Another problem encountered in this thesis was that of endogeneity. The findings in chapter 5 directly contradict the findings in chapter 4. Ultimately, this is tied to the data question. While chapter 5 was motivated by a question directly pertaining to the determinants military expenditures, chapter 4 was motivated by a desire to explore the effect of political power of the military, and military burden was used as a proxy for lack of a better alternative. Given the relevance and literature on both topics, it seemed interesting to explore both questions. Importantly, chapter 4 makes no causal claims. It would be difficult to extend the ICRG dataset backwards; however as more data becomes available more robust research will become possible in time.

8.3 Interdisciplinary Research

This thesis has attempted to study issues traditionally confined to the political science arena through an economic lens. The strength of this approach is that it is able to discern patterns across countries and make predictions about the future. Statistical pattern are useful in that they can suggest policies that might typically work in particular situations. They can also defend us from the temptation to over-generalise from particular examples and from the tendency to pick out from the multiplicity of possible causes that which conforms with the beliefs of the researcher.

The weakness of this approach is that it is greatly simplified and risks making over-generalisations about highly specific situations. On their own, economic models should not

inform policy. But they may serve as a good starting point or structure to more detailed, qualitative, studies.

Finally, the quality of this approach depends on data. As mentioned above, probably the greatest difficulty encountered in this thesis was finding data that adequately capture the concepts being studied. Chapter 3 discussed in detail the many problems associated with the data. However, thanks to the efforts of researchers at thinks tanks and academic departments, data collection is improving.

This thesis has attempted to combine both qualitative and quantitative methods. Chapter 2 presented a collection of qualitative case studies. These case studies were used to identify patterns in civil-military relations across different regime types. These patterns informed the theory that lead to a series of hypothesis that were tested empirically. The picture that emerged is richer than if only qualitative or quantitative methods had been used. As economists and political scientists increasingly exchange ideas, a deeper understanding of what drives development can be gained.

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